FEBRUARY 2, 1959

STEEL
The Metalworking Weekly

A PENTON PUBLICATION

Where Metal Stocks Gain

• Suppliers and users take note: A STEEL survey shows which metal product inventories will be built up in coming months . . . . . Page 117

Page 45 . . .

Why and How Automakers Drive To Win More Missile Business

Page 48 . . .

Industry Mops Up After Floods

Page 49 . . .

Chicago Bids To Be Top Exporter

Page 50 . . .

Here's List of Steel Capacities

Page 82 . . .

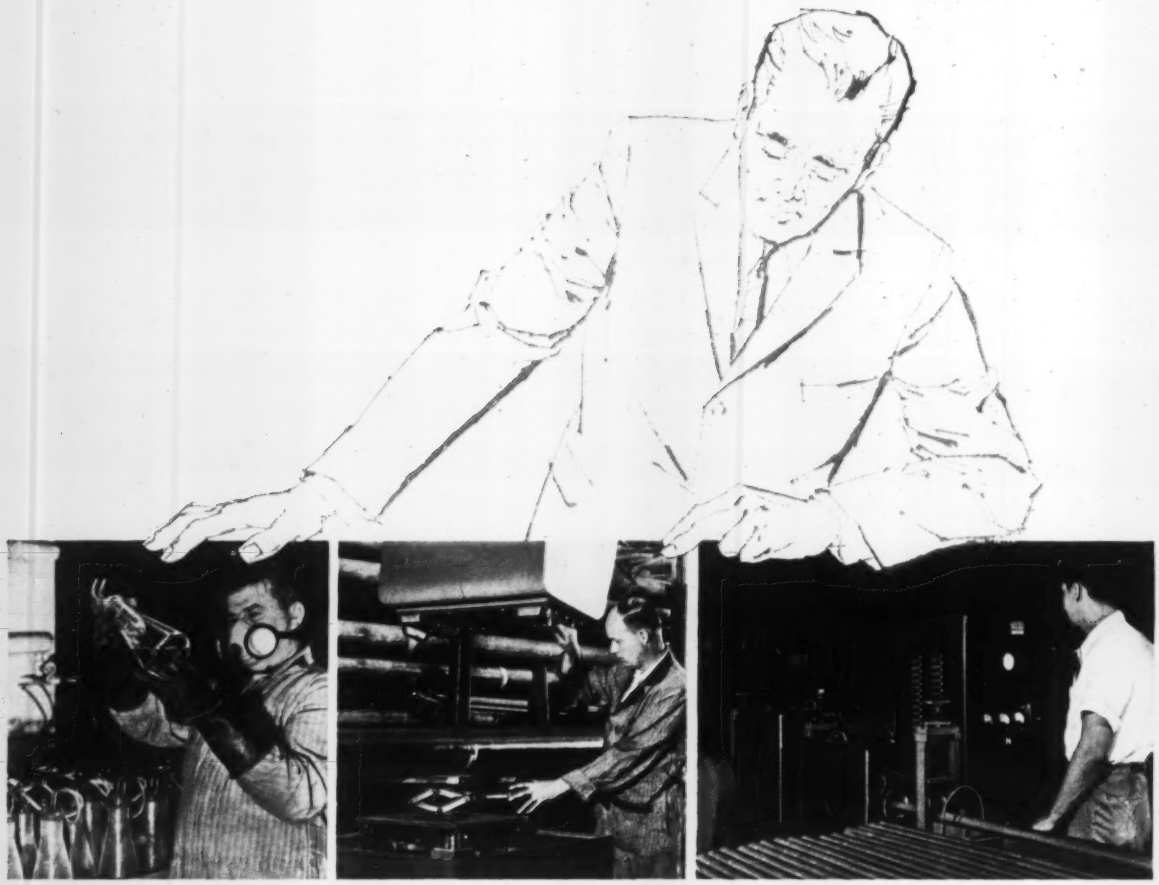
Radio-Controlled Cranes Carry Parts Through Phosphating Line

Page 96 . . .

What's Needed in Rocket Materials

Metalworking Outlook —PAGE 37

CONTENTS — PAGE 5



B&W Quality-Controlled Tubing

is matched to the application

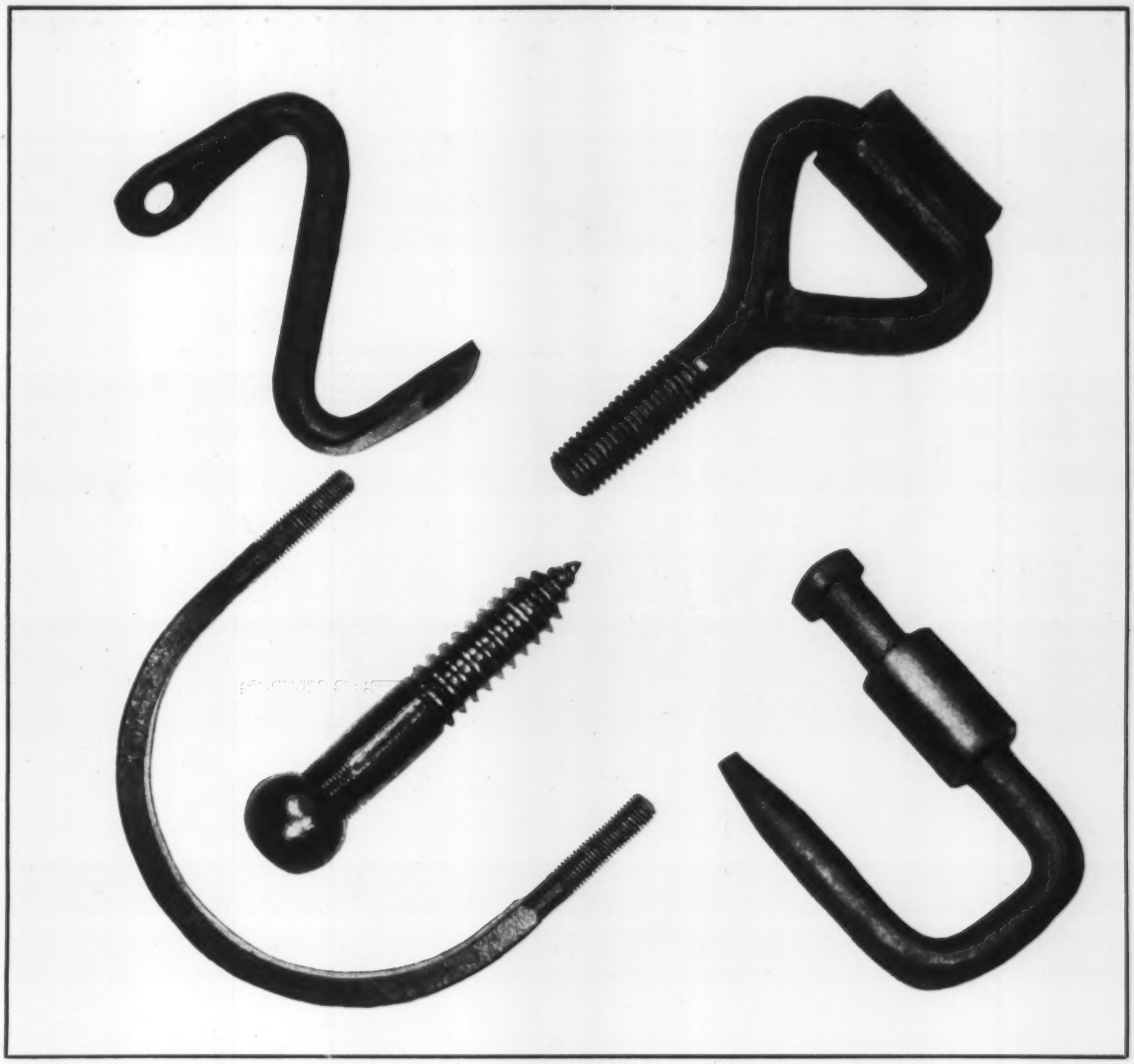
From raw materials to finished tube, quality depends upon control and "know-how." And when it comes to matching the one right tube, of the hundreds of possibilities, for a particular end use application, it takes specialized equipment and experienced technicians.

For instance: If corrosion is a problem — will a steel with a particular heat treatment do the job? If the tube is unusually long and center welding is employed to achieve length — is the joint completely satisfactory? If the tube must have a special soundness quality — is it free from hidden or invisible defects?

These are but a few of the quality control checks which insure that the tubes you buy from B&W are as near perfect in terms of performance as it is possible to make them. When you need stainless, carbon or high alloy tubing — for pressure or mechanical applications — you can rely on Mr. Tubes and B&W to supply the best. Write for bulletin TB-420 — The B&W Quality Control Story. The Babcock & Wilcox Co., Tubular Products Division, Beaver Falls, Pa.

TA-8030-G3

Seamless and welded tubular products, solid extrusions, seamless welding fittings and forged steel flanges —in carbon, alloy and stainless steels and special metals.



Every one a "special" fastener

You're looking at "specials"—steel fasteners made to meet a particular need. They are representative of the hundreds of types of specialties which we design and manufacture at our plant at Lebanon, Pa.

Our engineering staff has tackled just about every fastener problem you could imagine. Frequently they come up with suggested design changes resulting in substantial savings for the user.

As for variety of fasteners, the sky is the limit. Long, short, heavy or light. Headed, threaded, bent, or upset.

If you think a special might do a better job than the standard bolt you are now using, let us go to work on it. We'll give it our full attention, then offer recommendations. But if we find that a standard bolt is the answer, we'll gladly tell you so.

Fair enough? Then all you need do is get in touch with the nearest Bethlehem sales office. We'll have an experienced representative call at your convenience.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

How COMMERCIAL'S "Die Bank" cut component unit cost from $8.49 to $2.59

Wheel covers are important components in the four-wheel drive, aircraft towing tractors manufactured by the American Coleman Company. Because the tractor's front and rear wheels are both steerable, a sturdy, dished-out, custom-produced cover was required to fully protect the wheel enclosed mechanism against possible damage from stones and debris.

Full consideration was first given to producing the covers as stampings. Low quantity requirements and the high cost of special tooling ($2,300), however, made the unit cost prohibitive.

The first wheel cover was finally produced as a machined, malleable iron casting at a unit cost of $8.49, plus a pattern charge involving $200. A unit cost reduction to $3.50, plus a $250 chuck cost, was later effected by hand spinning the covers.

Still seeking to reduce unit costs even further, American Coleman discovered and investigated COMMERCIAL'S "Die Bank" facilities.

The result: By using forming dies from COMMERCIAL'S "Die Bank" of almost 50,000 different die components, tooling costs amounted to just $80 —instead of the $2,300 originally estimated for new dies. The unit cost of each cover now custom stamped by COMMERCIAL is only $2.59.

For more complete information on COMMERCIAL'S "Die Bank" write to Commercial Shearing & Stamping Co., Dept L-6, Youngstown 1, Ohio.

COMMERCIAL
shearing & stamping

SPECIALISTS IN THE SHAPE OF THINGS TO COME

Electric motor drive

Remote Control
Over 1000 combinations of current control
Simple polarity switch
End-to-center ventilation

LOWER WELDING COSTS

. . . increase your profits with HOBART'S new multi-range arc welders

HOBART helps you choose the welder best suited for your work

You never have to compromise when you choose from Hobart's complete line of arc welders. You can choose the exact type of unit you need. Superior built-in features help you realize:

BIG PRODUCTION SAVINGS through exclusive Multi-Range Dual Control. It improves weld quality on every job by permitting 1000 current control steps. Remote control lets the operator make fine adjustments right at the work. The rugged strength of a Hobart's basic parts enable it to stand abuse—a fact proved time and again in mills, foundries and fabrication plants where rough handling is common.

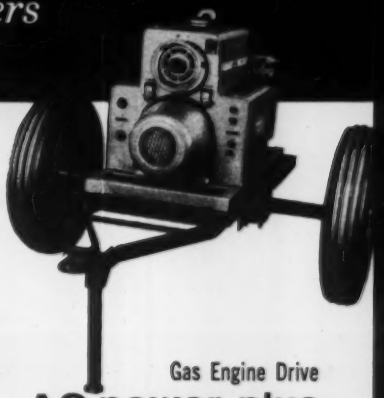
For FAST, LOW COST FIELD WELDING, Hobart welders can't be topped. They're built to last, liberally rated to take peak loads, and deliver a fast stable arc. No wonder they're the workhorse of the metalworking industry.

It will pay you to get complete details on Hobart's complete line.

LOOK AT THE CHOICE YOU HAVE:

● Electric Drive ● Engine Drive ● Transformer and Rectifier Types ● Combination Power/Weld Models ● Automatic and Semi-Automatic Equipment ● Self-Propelled Models ● Cutting and Gouging ● Induction Heating-Stress Relieving Units

HOBART BROTHERS CO., Box ST-29, TROY, OHIO, PH. FE 2-1223



Gas Engine Drive

AC power plus DC welding

This all-around Power/Weld lets the operator change over from DC welding to AC power without leaving the work. It's rugged, compact, convenient and powerful. Furnishes 200 amps. at 25 volts on a 100% duty cycle, 1 to 2 KW AC power while welding. Can also supply 5 KW full time AC power when not welding. Can run lights, tools, motors, pumps, sprays, etc.

Without obligation . . . Compare Hobart performance . . . then decide—

Ask us about . . .

the new, faster iron powder electrodes that open up a new field of cost savings by radically increasing welding rates.

HOBART School of Welding

. . . a non profit, fully accredited school—the finest of its type in the U.S.A. Get comprehensive training, specialized training, or brush-up courses. Low tuition.

HOBART TROY OHIO WELDERS

"Manufacturers of the world's most complete line of arc welding equipment"

USE THIS HANDY COUPON

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Please send me complete details on the items I've checked—without obligation, of course.

☐ *Electric Drive* ☐ *Power/Weld* ☐ *Iron Powder Electrodes*
☐ *Hobart Welding School* ☐ *Other Types:*_____

*Name*_____

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*Address*_____

*City*_____ *Zone*____ *State*_____

Send Complete Catalog on ☐ Arc Welders ☐ Welding Electrodes ☐ Welding Accessories

Held down "impossible" job for months vs. days

They were asking the "impossible" at this big West Coast mine. The hose used in their big beneficiation plant must be tough enough to handle the flow of murderously abrasive iron-ore slurry. Yet it still must be flexible enough to follow a twisting, bending course down from the top of the seven-story structure.

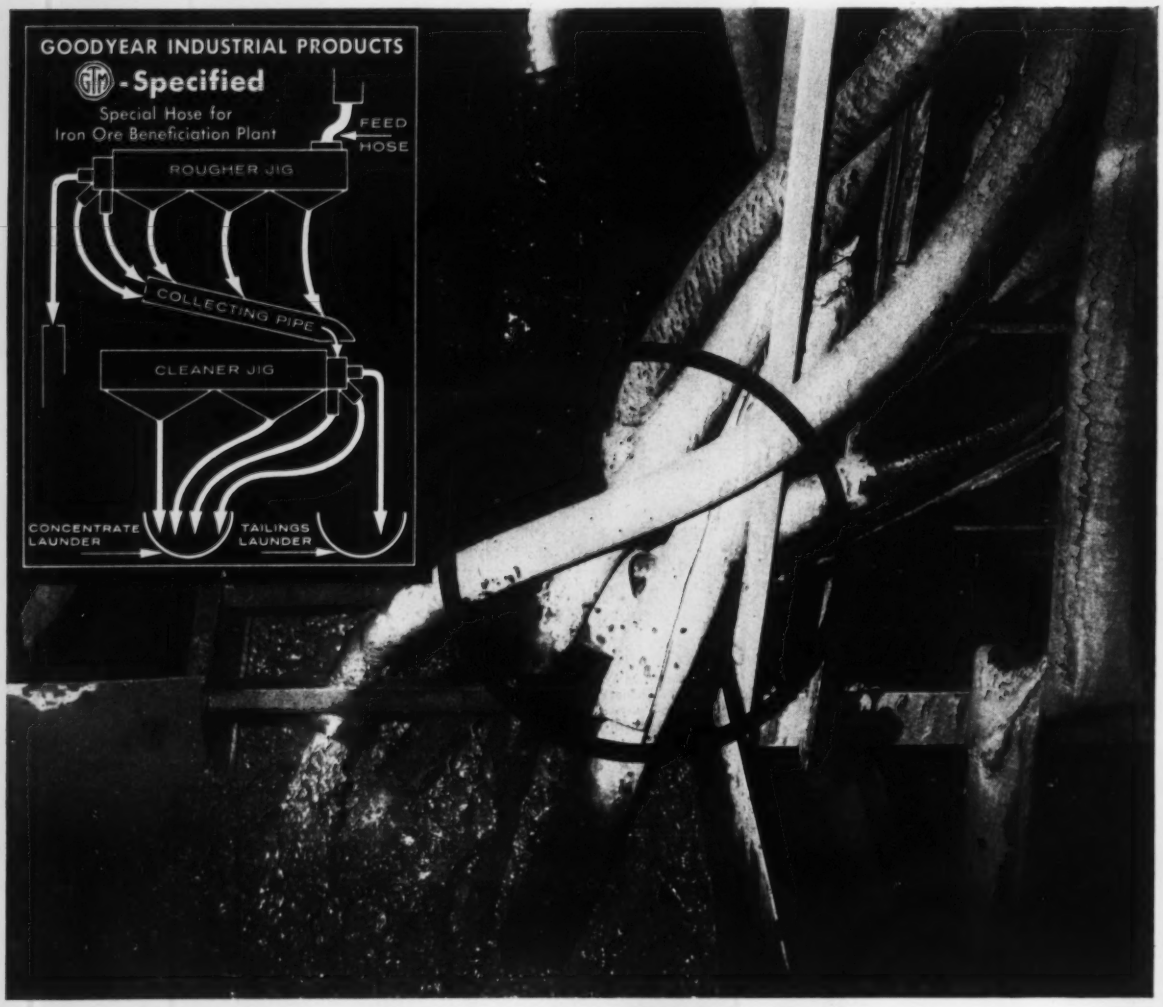
So it's little wonder their first hose sprang numerous leaks almost immediately – was finished completely in about 45 days. It wasn't until the G.T.M. – Goodyear Technical Man – recommended his special ore-carrying hose that they got satisfactory service.

In fact, the G.T.M.'s hose has been so successful that the company's purchased over 4,000 feet of it to date. It's been on the job over 12 months now – completely mastering this extra-tough job.

So once again, the G.T.M. has proved that the "impossible" often boils down to right hose – and the right recommendation. Make sure you get both–by contacting your Goodyear Distributor – or writing Goodyear, Industrial Products Division, Akron 16, Ohio.

• • •

IT'S SMART TO DO BUSINESS *with your Goodyear Distributor. He can give you fast, dependable service on V-Belts, Hose, Flat Belts and many other industrial rubber and non-rubber supplies. Look for him in the Yellow Pages under "Rubber Goods" or "Rubber Products."*



HOSE FOR ALL INDUSTRY BY

GOODYEAR

THE GREATEST NAME IN RUBBER

This Week in STEEL

The Metalworking Weekly

February 2, 1959
Vol. 144 No. 5

EDITORIAL 43

Prosperity a la McDonald: The steelworker doesn't win. Neither does anyone else.

SPECIAL FEATURE 117

Morris, Wheeler & Co. Inc.

Inventories Continue Up

Our cover photo shows a veteran employee carrying steel bars by hand, a real balancing feat. Most lifting and conveying is done by cranes and electromagnets today, but tradition attaches to abilities like this.

The photo suggests inventories, the subject of our feature story this week.

Respondents to STEEL's quarterly survey expect buildup of inventories to continue to midyear.

WINDOWS OF WASHINGTON 54

You'll probably see Senator Symington's views on defense win in Congress to some extent.

MIRRORS OF MOTORDOM 63

Detroit appears headed for a 5.5 million to 5.8 million car year on basis of three months' sales.

THE BUSINESS TREND 67

There's evidence that the business recovery is bringing about changing employment patterns.

WHERE TO FIND—

Behind the Scenes 6
Letters to the Editors 10
Editorial & Business Staffs .. 16
Calendar of Meetings 23
Men of Industry 71
New Products 99
New Literature 113
Advertising Index 145

Business— METALWORKING OUTLOOK 37

☑ Why and How Automakers Drive To Win More Missile Business 45
Industry Mops Up after Floods—Some metalworking plants hit 48
Chicago Bids To Be Top Exporter—Survey used as sales tool 49
British Steelmakers Expect Slow Quarter—Exports are up 49
☑ 26 Steelmakers Hike Capacity 6.9 Million Tons—Data in table .. 50
Bethlehem and Youngstown Call Off Merger Fight 52
Ormet Corp. Becomes Fully Integrated from Aluminum to Ingot 53
Do You Get Your Money's Worth on Sales Calls? 57
☑ How To Set Managers' Pay Fringes—Final article in a series 60
Pittsburgh and Sharon May Merge—Capacity would rank ninth 77

Production— TECHNICAL OUTLOOK 81

☑ Automated Phosphating Line Pays Off in First Year 82
Leadtime and Part Cost Slashed by Tape Control 86
Cutting Diecasting Costs—Be sure you use right die material .. 87
Machine Topics—Unit Lops 24 Hours Off Job 88
Progress in Steelmaking—Way To Boost Hot Strip Yield 90
"Two Alloy Steels" Plan Avoids Mix-Ups, Cuts Costs 94
☑ We Need Better Materials for Rockets—Four areas being probed 96

Markets— MARKET OUTLOOK 115

Complete Index to Market News and Prices 115
☑ Buildup of Inventories Continues—Quarterly survey results 117
Steelworks Operation Chart and District Ingot Rates 124
Service Center Shipments To Gain 10 Per Cent This Quarter .. 124
Blast Furnace Production of Metal Off 27 Per Cent in 1958 143
New Strength Developing in Scrap 137
Nonferrous Metals—Small Forms Win Guarantees 140

STEEL, the metalworking weekly, is selectively distributed without charge to qualified management personnel with administrative, production, engineering, or purchasing functions in U. S. metalworking plants employing 20 or more. Those unable to qualify, or those wishing home delivered copies, may purchase copies at these rates: U. S. and possessions and Canada, $10 a year; all other countries, $20 a year; single copies, 50 cents. Metalworking Yearbook issue, $2. Published every Monday and copyright 1959 by The Penton Publishing Co., Penton Bldg., Cleveland 13, Ohio. Accepted as controlled circulation publication at Cleveland, Ohio.

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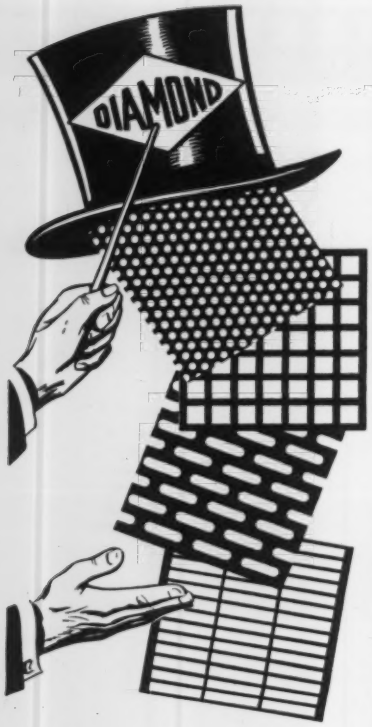
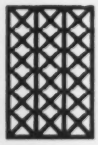
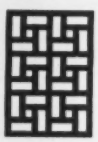
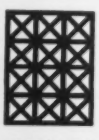


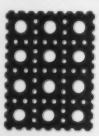
Top-Hat Quality
IN
Perforated Metal

The popular Diamond Perforated-metal patterns shown above are only a few of the many illustrated and described in our 32-page Catalog No. 39. All of these standard patterns are available in a wide range of unit-opening sizes and we are always equally pleased to quote on original designs of any type or size.

Catalog 39 also illustrates and describes our high-quality lines of *Ornamental Cane*, Perforated-Metal Sheets for Accoustical installations and Heavy-Duty Architectural Grilles. Write, today, for a free copy.

Correspondence is especially invited regarding ANY requirement for perforated-metal panels or parts. We are equipped to fabricate special sections to any desired extent and welcome opportunities to make money-saving suggestions.



DIAMOND MFG. CO.
WYOMING WILKES-BARRE AREA PA.

Manufacturers of DIAMONTEX, the Perforated Metal Lay-In panel for better Acoustical Ceilings. New Bulletin No. 47, gives complete information. Write, today, for free copy.

behind the scenes

Quick Review

It's generally accepted by the Freudian set that marked concern with past events suggests a creeping decadence. Well, deterioration has set in here because we are all wrapped up in last week's STEEL. Instead of looking to the future, and whipping up a flurry of enthusiasm over coming attractions, we are drawn to the Jan. 26 issue, and three particular items.

On Page 35, Editor-in-Chief Irwin Such took for his text the theme that management can improve its product and produce it at less cost if the company wades among its employees with a big ax. Irwin suggests that deadwood is a luxury that few well managed companies can afford. Moreover, after the deadwood has been eliminated (possibly to be burned as a sacrifice on the altar of efficiency), those who still have jobs will work harder and with much more enthusiasm.

He rightly pointed out that there was a moral somewhere in the text. Now, as an old Israeli gentleman remarked several thousand years ago, the guilty flee when no man pursueth, and if you hear that ol' Shrdlu was last seen heading for the wood box, you may draw your own conclusions.

Modest Advertiser

The second item of interest was a jim-dandy double page ad for Norton Abrasives. It was a four-color spread featuring a painting captioned "Toolmaker's skill is the marvelous science of making things fit." The painting was well done—none of this junk that takes prizes at art shows. However, while we were admiring the illustration, and pondering the fact that skilled men who made things were obliged to other skilled men who made measuring devices to measure the things the skilled men made, we felt a new sense of pride in the men who produce for metalworking. Next time we louse up a simple wooden miter joint with our practically toothless old hand saw, we'll derive comfort from the knowledge that metalworking, glory be, is in capable hands, the hands of toolmaking. Toolmaking has become a great industry serving all industry—and Norton merely claims to be of help to the men who make the tools.

Test Backfires

Item number three is a test that appeared on Page 52 above a story explaining how salaries should be set. This was the second in a series of three articles on techniques for setting salaries of metalworking managers. The first appeared Jan. 19, and the third will be found on Page 60 of this week's issue. (If you want extra copies, slip us the word, Ferd.)

Candidates taking the test were required to answer a lot of sneaky questions about themselves, their aptitudes, and judgment. The gimmick was that each candidate was asked to pretend that he was his own boss, and grade himself accordingly. Never one to skip a promising test, we entered our answers lightly and stealthily, and were horrified to learn that our natural honesty betrayed us into the admission that we could never hope to rise much above a moron, third class.

Editor's Grinding Toil

Perhaps the illustration you are looking at is not precisely as wide as a church door, but 'twill do. The main idea is to show STEEL's Chicago editor, Bill Dean (far right) and pig on a platter with an apple in its mouth. The occasion was a demonstration and dinner staged by Wallace Supplies Mfg. Co., Chicago, to promote its new machine for cutting and preparing joints in pipe for welding purposes.

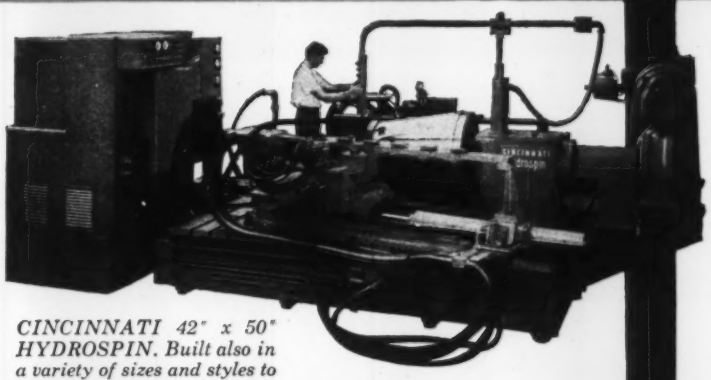
"Thought you might be interested in the modern way of demonstrating new equipment," Willie wrote. "Today's thoughtful manufacturer brings the audience to his equipment. He demonstrates, holds a round table, and puts on a spread. Take that picture of me and the suckling pig, for instance—some class, eh? The menu also included snails, white asparagus with polonaise sauce, lime and tangerine salad, and Chateau Margot wine. Host at the affair was E. J. DeWitt, president of Wallace Supplies Mfg. Co."

Maybe you might think we'd be more interested in modern methods of demonstrating equipment, Bill, than in the tough work you have to do—but you'd be mistaken. Oh, well, we don't like polonaise sauce, anyway.

Shrdlu

(Metalworking Outlook—Page 37)

"Missile Age" machining is "Chipless"!



CINCINNATI 42" x 50" HYDROSPIN. Built also in a variety of sizes and styles to meet your missile production requirements.

In developing rocket and missile components, the Cincinnati Hydrospin® can save valuable time and materials in the production of prototype parts. Equally important, the desired part characteristics of high strength, accuracy and fine finish are readily obtainable by Hydrospinning.

This *chipless machining* method is ideally suited for the production of parts of varied contour and extremely thin wall section, as well as tubular, conical and hemispherical shapes. For detailed information, call in a Meta-Dynamics Division field engineer.

CINCINNATI **Hydrospin**

Meta-Dynamics Division

THE CINCINNATI MILLING MACHINE CO.

CINCINNATI 9, OHIO, U. S. A.

1st Choice

For Versatility and Adaptability

BULLARD Hydra-Feed Lathes

Rough forging of front axle spindle SAE #1037 Steel, Brinell Hardness 31-32 on the C scale.

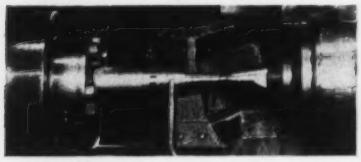
The Senior Engineer at one of the leading motor car manufacturers in Detroit, was looking for a tracer lathe that went beyond his immediate requirement and offered easy conversion to other uses in years to come, to give longest tool life, to do the job with a minimum of shutdown time, to handle future developments in the realm of cutting tools, to reduce scrap to a minimum.

The answer to this multiple problem, according to the Senior Engineer was "BULLARD HYDRA-FEED TRACER LATHES."

We invite you to investigate the advantages which Bullard Hydra-Feed Lathes, either tracer or multiple tool models, offer you. Phone or write your nearest Bullard Sales Office, Distributor or

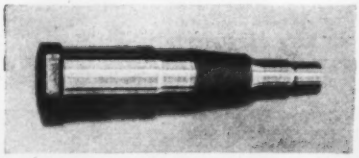
THE BULLARD COMPANY

BRIDGEPORT 9, CONNECTICUT



Rough turning with Rear Tracer Slide.

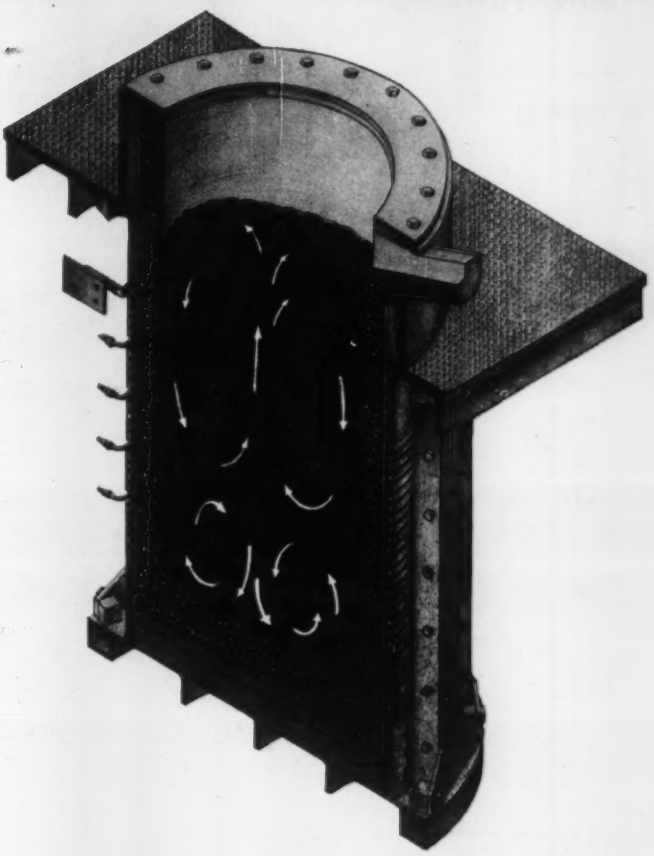
Finish turning with Right-Hand Top Tracer Slide



Finished piece complete cycle time — 65 seconds.

AJAX-JUNKER

a new principle in 60 Cycle induction melting



- A cylindrical induction coil supplied with ordinary 60 cycle current induces heat and vigorous electromagnetic stirring in the molten metal charge.

  Integrated electric controls regulate power, maintain high power factor automatically.

  Monolithic refractory linings are made by ramming against the sturdy water-cooled coil held in a rigid frame of magnetic and structural steel.

  This new principle was perfected in Europe over the last seven years. Over 100 Junker furnaces are now in use. AJAX-JUNKER designs are based on latest experience, using American components and practices throughout.

- Outstanding results are proven in these fields:

  DUCTILE and ALLOY IRON CASTINGS
  RECOVERY OF IRON TURNINGS
  RECOVERY OF ALUMINUM SCRAP

Available sizes range from 1 to 10 tons, with normal melting cycles from 2 to 4 hours. Power ratings are 200 kw through 1500 kw.

May We Explore the Possibilities of this New Method with You?

AJAX USA

ENGINEERING CORPORATION

TRENTON 7, NEW JERSEY

60 CYCLE INDUCTION MELTING

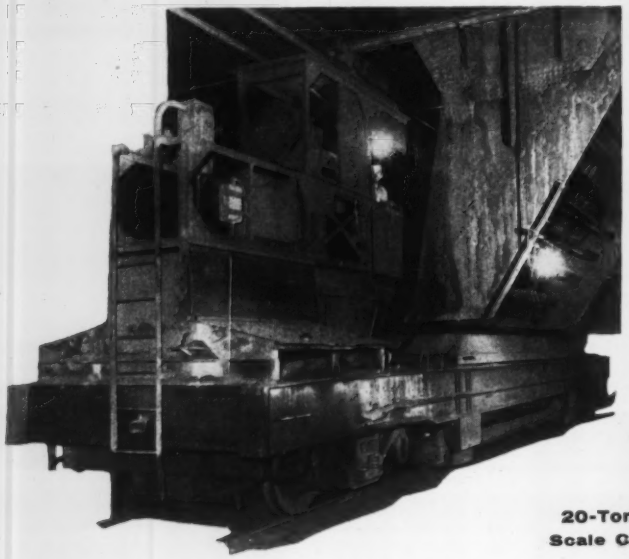
Associated Companies: Ajax Electrothermic Corporation Ajax Electric Company

custom designed
and rugged

ATLAS

CARS

are built to fulfill
performance expectations



20-Ton
Scale Car

Atlas cars are made to individual service requirements of each customer and are equipped with approved devices for operator safety. This assures dependability that helps hold costs and schedules in line.

Since 1896 designers and builders of Ore Transfers . . . Scale Cars . . . Coke Quenchers . . . Coal Larries . . . Door Machines . . . Safety-Type Transfers . . . Storage Battery Locomotives

ATLAS CAR & MFG. COMPANY
1140 IVANHOE ROAD
CLEVELAND 10, OHIO

LETTERS
TO THE EDITORS

Invaluable Reference Material

"Facts and Figures of the Metalworking Industry" (Jan. 5, opposite p. 138) is invaluable reference material. We would appreciate a copy of the entire section.

S. D. Smith
Rust Engineering Co.
Pittsburgh

• • •

As an old subscriber of your weekly magazine, I would appreciate it if you would send me three or four extra copies of this article. These figures are interesting to some of our business friends overseas.

H. Kern
American Saar Steel Corp.
New York

Admires Yearbook Issue

The amazing issue of STEEL, dated Jan. 5, filled me with so much admiration for its accuracy and completeness that I was prompted to write and offer my heartiest congratulations for a job well done.

There is not a metalworking concern in the country that cannot study the statistics you have given with profit to themselves and their industry.

W. H. Worrilow
President
Lebanon Steel Foundry
Lebanon, Pa.

• • •

Your Jan. 5 issue is certainly one which all of you at STEEL can be proud of but then, we constant readers of your favorite journal expect great things, and thanks to you we get them.

F. V. Horak
Manager Metallurgical Operations
Harnischfeger Corp.
Milwaukee

• • •

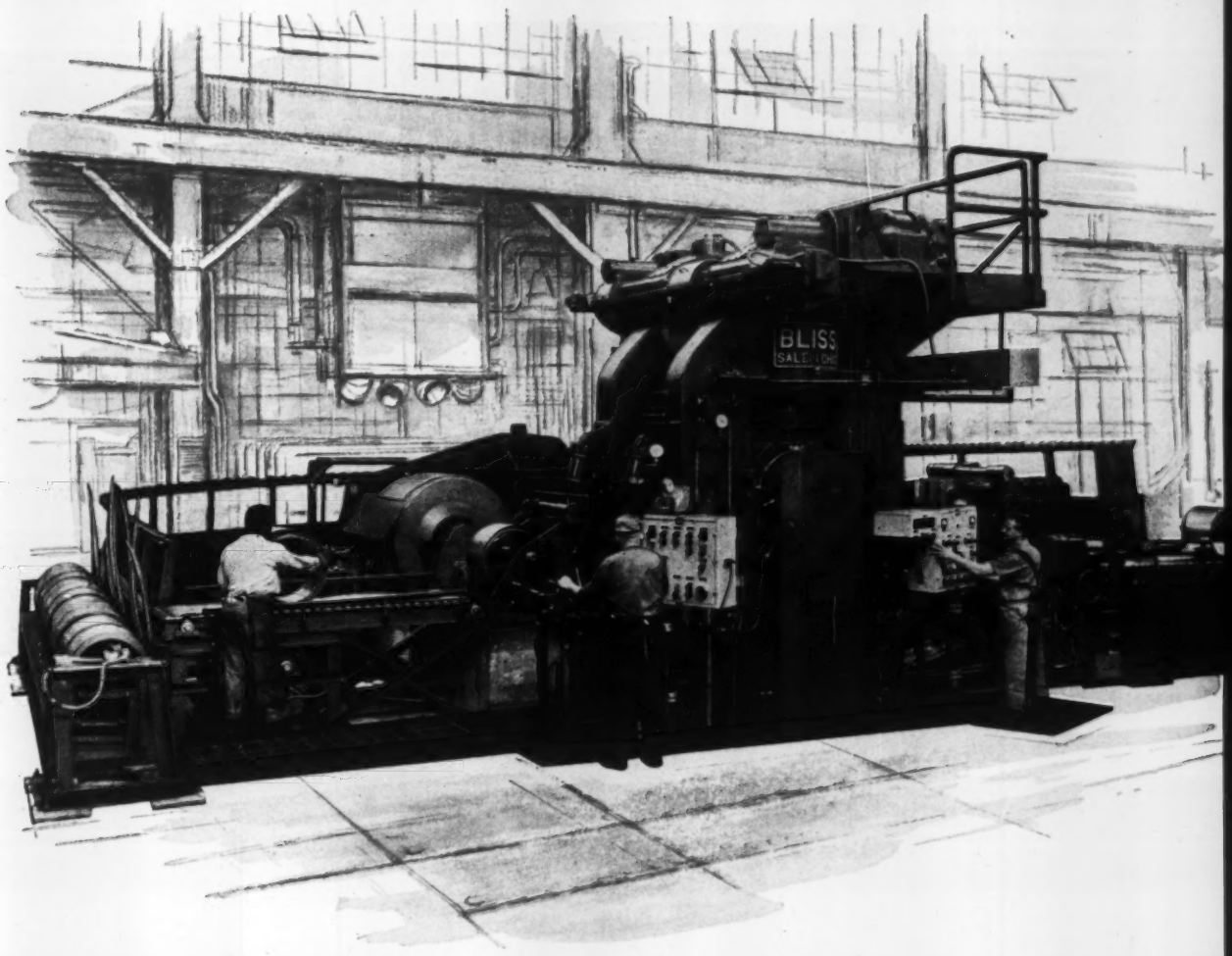
We must compliment you on a job well done. We are particularly impressed with your "Facts & Figures of the Metalworking Industry" and would appreciate it if you would send us two additional copies of this reference section.

John W. Hoffmann
Marathon Specialty Steels Inc.
New York

• • •

I want to extend my compliments on the excellent yearbook issue. I am most

(Please turn to Page 12)



HOW TO ROLL MORE FOR LESS:

replace three-and-a-half old-timers with one really modern mill

The recently-completed modernization program at H. K. Porter Company's Riverside-Alloy Metal Division has doubled the plant's capacity of specialty nonferrous alloys with essentially the same work force.

A central unit in the modernization is the Bliss 4-high intermediate mill shown here. According to Riverside, this single new mill provides greater production than the three old mills it replaces—a fourth old mill is still used to some extent, hence the three-and-a-half figure. Equipped with a run-around roller conveyor, the new mill coils metal on the first pass from ½-inch bars; returns the coils automatically to the entry side for further passes. Former practice was to roll flat for four or five passes before coiling.

Riverside reports that the new equipment will pay for itself in the short space of a few years. It's an outstanding example of the way a well-planned improvement program . . . plus Bliss rolling mill equipment . . . can bring new economy and efficiency to metal rolling. For other examples, write us today for a complimentary copy of our new 84-page Rolling Mill Brochure.

BLISS
SINCE 1857

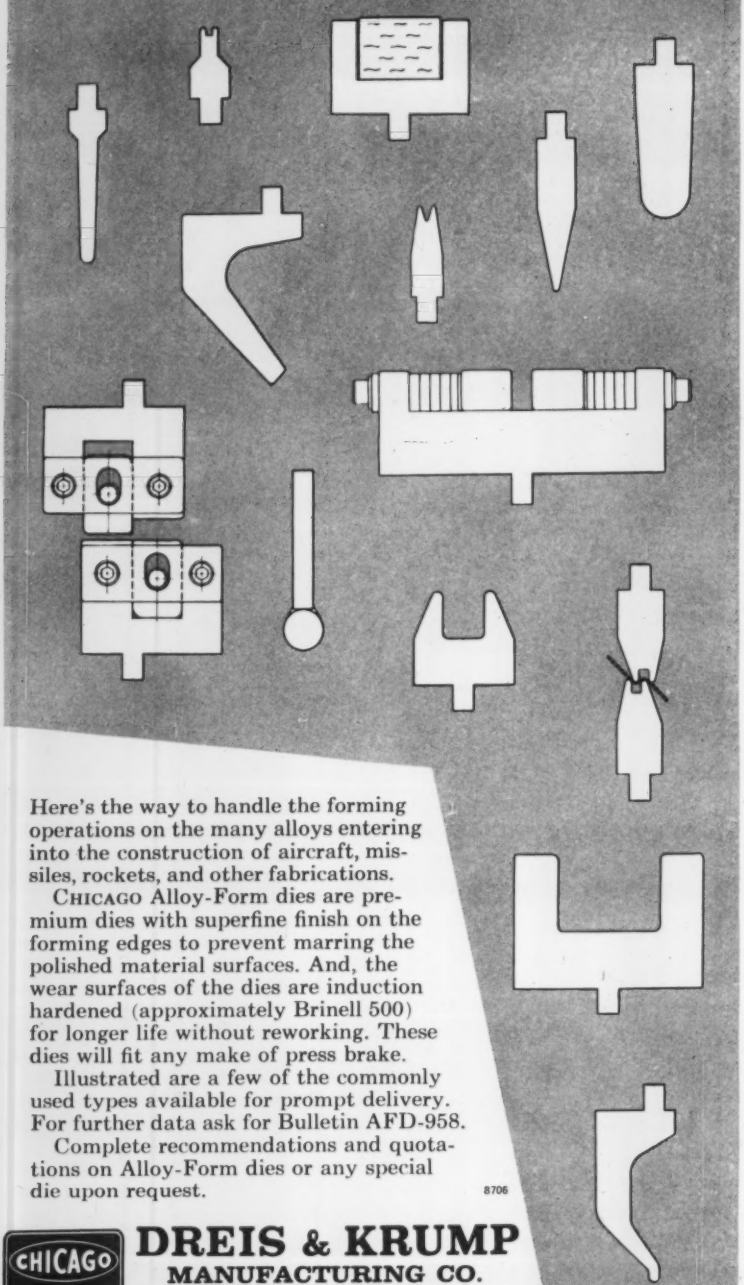
Bliss is more than a name . . . it's a guarantee

E. W. BLISS COMPANY, Rolling Mill Division, Salem, Ohio

Subsidiary: The Matteson Equipment Company, Inc., Poland, Ohio

Alloy Forming for
AIRCRAFT
MISSILES
ROCKETS
and
OTHER FABRICATIONS

CHICAGO®
ALLOY-FORM DIES
For All Makes of Press Brakes



Here's the way to handle the forming operations on the many alloys entering into the construction of aircraft, missiles, rockets, and other fabrications.

CHICAGO Alloy-Form dies are premium dies with superfine finish on the forming edges to prevent marring the polished material surfaces. And, the wear surfaces of the dies are induction hardened (approximately Brinell 500) for longer life without reworking. These dies will fit any make of press brake.

Illustrated are a few of the commonly used types available for prompt delivery. For further data ask for Bulletin AFD-958.

Complete recommendations and quotations on Alloy-Form dies or any special die upon request.

8706

CHICAGO DREIS & KRUMP

DREIS & KRUMP
MANUFACTURING CO.
7458 S. Loomis Blvd., Chicago 36, Illinois

Press Brakes • Press Brake Dies • Straight-Side-Type Presses
Hand and Power Bending Brakes • Special Metal-Forming Machines

LETTERS

(Concluded from Page 10)

delighted to see the marvelous approach you folks are taking in your analyses.

Reginald C. Morrell

Market Research Manager
Associated Spring Corp.
Bristol, Conn.

This Firm Makes Towers, Too

I always read with interest the various articles in STEEL, especially those dealing with aluminum structures. In "Structural Aluminum Begins To Move" (Dec. 15, 1958, p. 179), you state that Aluminum Co. of America has contracted with a New Jersey power company for 60 aluminum transmission towers and that they are the first applications for the light metal. That is not true. We have designed and manufactured an all aluminum type tower for some years, and have these products installed throughout the world.

Lewis A. Bondon

President
Prodelin Inc.
Kearny, N. J.

Interesting Facts on Ceramics

I read "You Can Make Ceramic Tools Pay Off" (Dec. 15, 1958, p. 128) and thought that it contained some interesting facts about ceramic tooling.

I could not keep that article so I would appreciate your sending me an extra copy.

Leroy Mercer

New Philadelphia, Ohio

Requests Pension Reprints

Your Nov. 17, 1958, issue suggests your willingness to send reprints of "Feeling the Pinch for Pensions" (p. 68). It is an excellent article and I would like to have 15 copies.

Seth W. Sizer

Certified Life Underwriter
Chattanooga, Tenn.

Confusing Subject Simplified

Thank you for the reprint of your good article, "Get Ready for the New Boom" (Nov. 17, 1958, p. 97).

You certainly did an excellent job of simplifying a complex and often confusing subject.

Franklin S. Catlin

Manager
Marketing Development
Magnaflux Corp.
Chicago

Sends Praises on Copper Study

One of your associates loaned us a copy of the Oct. 27, 1958, issue of STEEL. We wish to compliment you on the special study, "Copper and Its Alloys" (p. 75). May we have four reprints of this study?

J. J. Mullen

Sales Manager
Western Copper Mills Ltd.
Annacis Island
New Westminster, B. C.

Helicopter Manufacturer Specifies

Straightening Ostuco Special Quality Tubing to extremely close limits at Shelby mill.

"Our specifications for seamless steel tubing used in rotor drive shafts are tough to meet. In addition to stringent O.D., wall and concentricity tolerances, we require *special straightness* — tube after tube, shipment after shipment.

"Ohio Special Quality Tubing surpasses any other tubing we have ever used. We know this to be fact. Scrap and rejects are at a new low, inspection OK's and savings on this part are at a new high."

This actual case history may parallel your own product problems. For with Ohio Special Quality Tubing it's only the *quality that's special.* For further information contact our nearest sales office, listed in the Yellow Pages, or the plant at *Shelby, Ohio — Birthplace of the Seamless Steel Tube Industry in America.*

AA-9011

OSTUCO TUBING

OHIO SEAMLESS TUBE DIVISION

of Copperweld Steel Company · SHELBY, OHIO

Seamless and Electric Resistance Welded Steel Tubing • Fabricating and Forging

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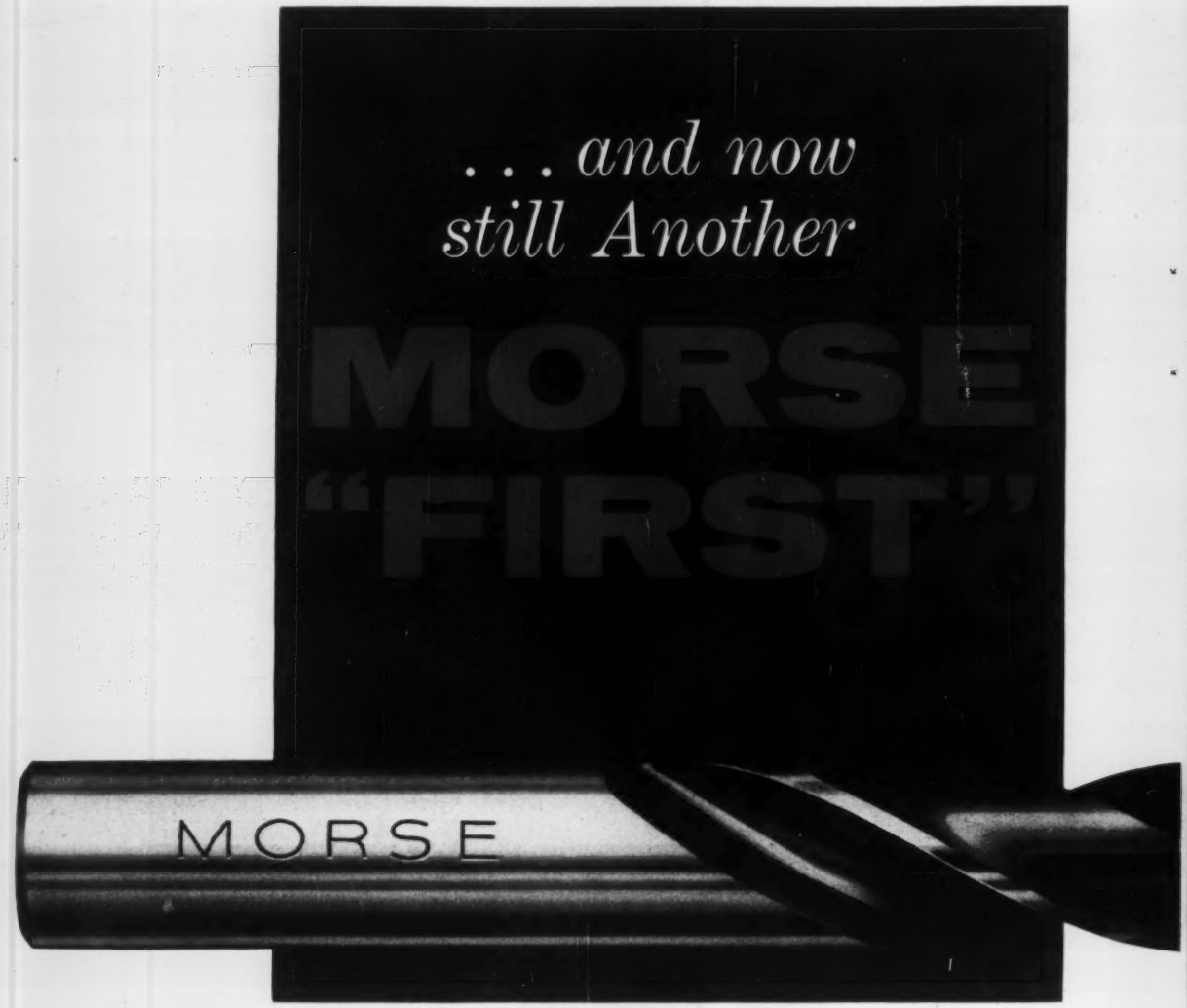


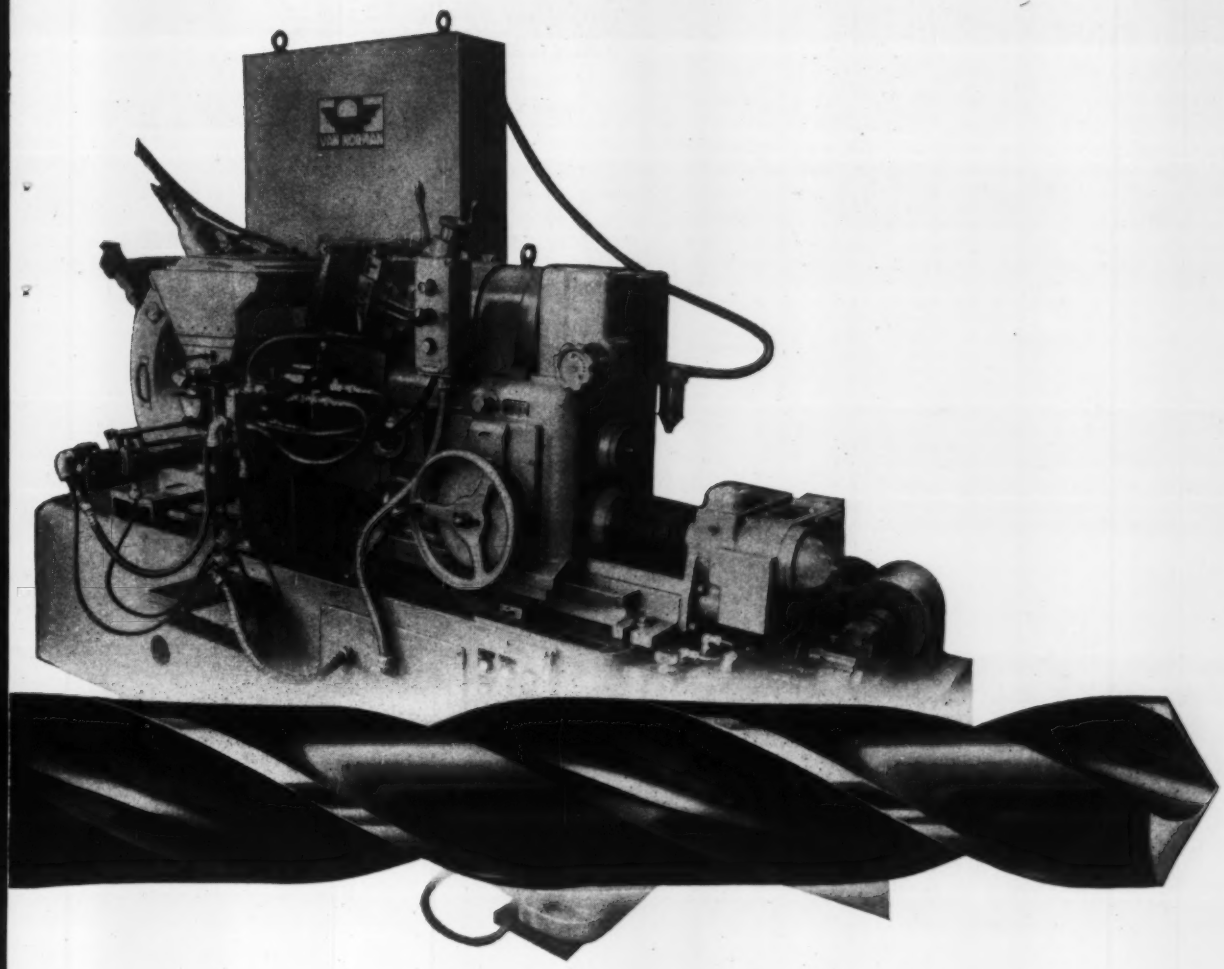
Quality Precision Grinding stepped VAN NORMAN Centerless Grinder

Ever since Stephen Morse produced the first twist drill, Morse has been the leader of progress in cutting-tool production methods.

Electrolizing . . . Vectormatic Taps . . . Morse's flute-grinding process . . . these are some of the Morse milestones in supplying better and better cutting tools to industry.

Now here's another step ahead . . . centerless grinding of drills on this new high-precision, high-production Van Norman Diversimatic machine, specially adapted to Morse requirements.

To *you*, this means *new high standards* of uniform quality and prompt delivery. See your Morse-Franchised Distributor *today*.



up with this NEW

MORSE *means*
"THE MOST" *in Cutting Tools*

MORSE TWIST DRILL & MACHINE CO., NEW BEDFORD, MASS.

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ADAMS FACT FILE #2

PLANT AIR

Moisture Chief Cause of Trouble . . .

Every company today is looking for ways to offset the increased costs of labor, material, equipment and services. At a gasoline station you expect "Free Air", but in industry it is a major expense. Perhaps in your own plant, for an investment in a few minor compressed air system alterations, significant savings are possible.

Water, sludge, rust, oil and dirt in compressed air systems are prime causes of maintenance and production down-time. Water vapor condensing in air lines tends to corrode the piping. Also, water present in the piping may freeze during winter, causing serious reduction of compressed air supply. Such restrictions are often difficult to locate and thaw. This same line moisture may emulsify lube oil destroying its lubricating value and the resultant mixture has high fouling characteristics. Frequently, ice will form within the tool itself since expanding air cools the moisture . . . tool efficiency will be seriously affected.

Some of the Other Problems Created By Wet Compressed Air . . .

Wet compressed air is not only a construction and production tool problem. Faulty paint jobs, contaminated chemical and food products can often be traced to moisture laden compressed air. Waterhammer, unequal pipeline thermal expansion and line leaks also result from collected moisture. In addition, air lost through traps, and in blow-down of compressed air lines provide no useful work . . . represent a sizeable power loss.

You Can Lick Compressed Air Moisture Problem . . .

All of these hidden costs can be virtually eliminated by the installation of an Adams Aftercooler and Cyclone Separator between the compressor and receiver tank. By cooling discharge air to within 10° F. of cooling water temperature — guaranteed with Adams standard Aftercoolers — the moisture can be removed at the separator. Pressure loss is less than one-half pound on these units including the separator. In severe cases, moisture removal of over 90 per cent can be obtained by cooling the air with Adams 2° Aftercooler to within 2° F. of water temperature.

Air Filter for Final Protection at Point of Use . . .

As an added safeguard for expensive tools and equipment, an Adams Poro-Stone Air Filter should be installed just before the air is used. These filters remove all solid material picked up by the air stream. With an Adams Aftercooler, Cyclone Separator and Air Filters clean, dry, trouble-free air is supplied to your production tools. You get continuous service with minimum maintenance.

For further information on how the complete line of Adams air equipment can solve your compressed air problems, write today for your free copy of Bulletin No. 712 on Aftercoolers and Bulletin No. 117 on Poro-Stone Air Filters from the R. P. Adams Company, Inc., 222 East Park Drive, Buffalo 17, New York.

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the Metalworking Weekly

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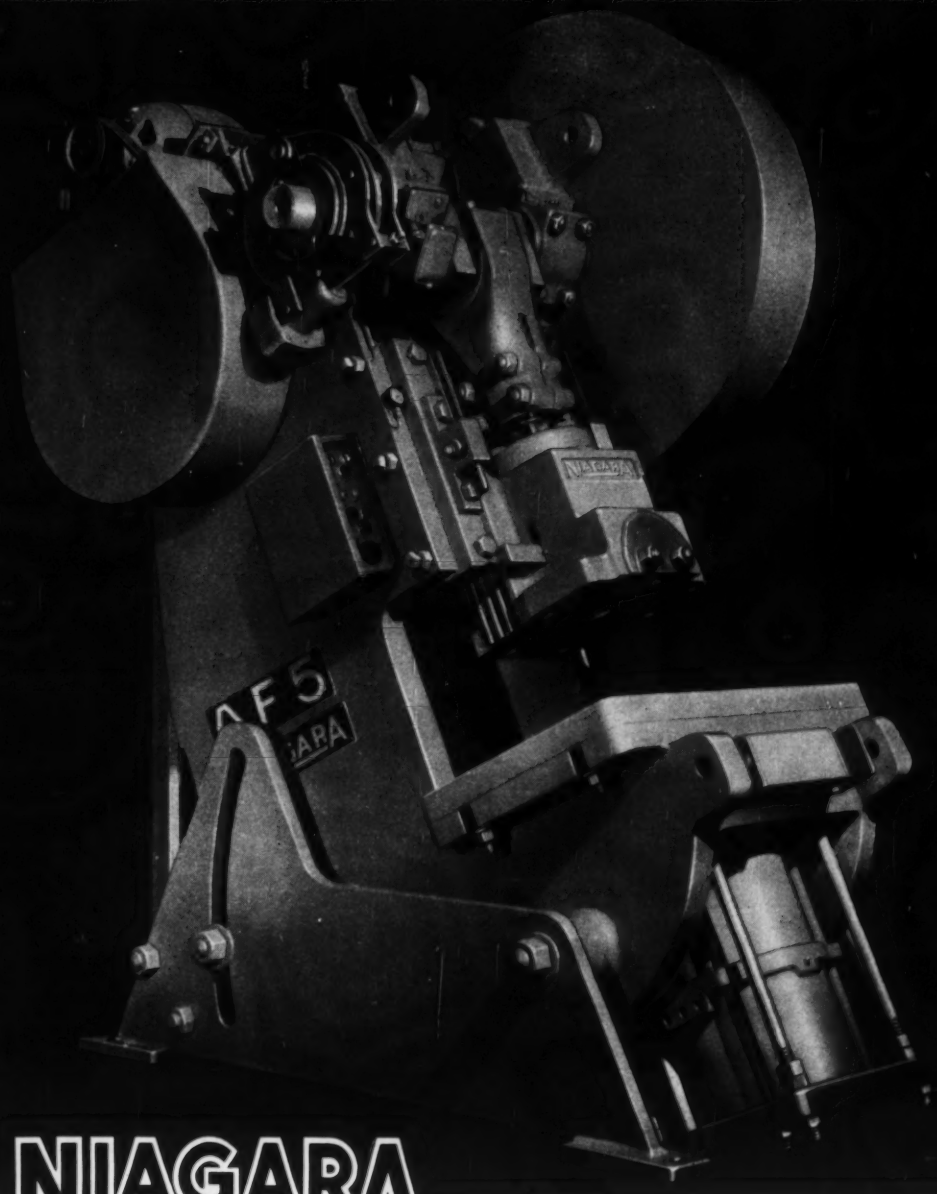


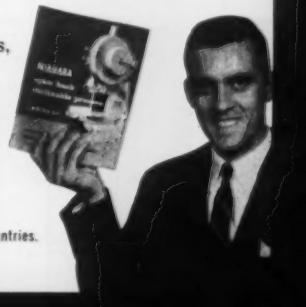
NIAGARA

Meet the new Series AF. Look it over . . . typical Niagara engineering from crown to base . . . every detail a benefit to you.

- Rugged, rigid frame for greater accuracy, longer die life.
- Unusually long, rigid slide of unique design prevents deflection of ways, solidly supports dies and extends their life.
- Exclusive multiple "V" gibbing for more guiding surface and greater resistance to off-center loads.
- Cool-running, long-wearing, pneumatic friction clutch and brake operate directly on the crankshaft . . . fewer parts to start and stop . . . faster engagement.
- Modern, rigidly supported gearing runs in sealed oil bath for long life.
- Simplified control for safer, time-conserving press operation.
- Patented one-man inclining mechanism.
- Full complement of accessories to meet your specific needs.

Look at the range: 14 sizes, geared and non-geared, shaft diameters 1¼" to 7½", capacities 5½ to 250 tons.
Niagara Machine and Tool Works, Buffalo 11, N. Y.

Now get the whole story . . .
Send for New Bulletin 55.



DISTRICT OFFICES: Boston • Buffalo • Cleveland • Detroit • Indianapolis • New York • Philadelphia / Distributors in principal U.S. Cities and major foreign countries.

NOW CF&I WIRE . . .

clean . . . convenient . . . compact . . . cuts costs

This new, revolutionary method of packaging keeps CF&I Wire free of rust and dust from the last pass on the drawing frame, through shipping and storage, until the sealed fibre drum is opened at your wireforming machines.

Each 600-lb. capacity fibre drum holds from five to eighteen miles of CF&I wire in *one continuous length*. It provides these cost saving advantages: • **Increased production (fewer set-ups)** • **Wire will not snag or kink** **Simplified storage (stack them)** • **Easier inventory control (count them)** • **Can be palletized for easy handling** • **Less scrap loss (no coil ends).**

Whatever your packaging requirements, or whatever your specifications for steel wire may be, check with CF&I. Our newly modernized and enlarged plants can provide fast delivery on high or low carbon steel wire . . . round, flat or shaped . . . in a wide variety of sizes, tempers, grades and finishes . . . in small quantities, carload or mixed carload lots.

. . WHEN YOU NEED WIRE . . . MAKE

IN FIBRE DRUMS

Here is a partial list of the many types of carbon steel wire manufactured by CF&I:

GRADES

low carbon
medium high carbon
high carbon
  round
  square
  flat
  shaped

FINISHES

bright dry drawn or lime bright
bright grease drawn
cadmium coated
coppered
extra clean smooth bright
galvanized
liquor
white liquor
tinned

STANDARD TYPES (partial list)

aircraft cord
bee
bobbin ring
bobby pin
bookbinder
broom
brush
casing
clip
concrete reinforcing
cotter pin
curtain spring
die spring
fine & weaving
fuse
Gamma spring
garment hanger
glass netting
hair pin
hat
hose, reinforcement
hose, mechanical
hose, vacuum
lock spring
lockwasher
manufacturers' drawn
mattress
merchant
nail
oil tempered
picker tooth
picture cord
pin ticket
regulator
rope
safety pin
screen
shaft, flexible
Signal Corps
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spring
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staple
stone
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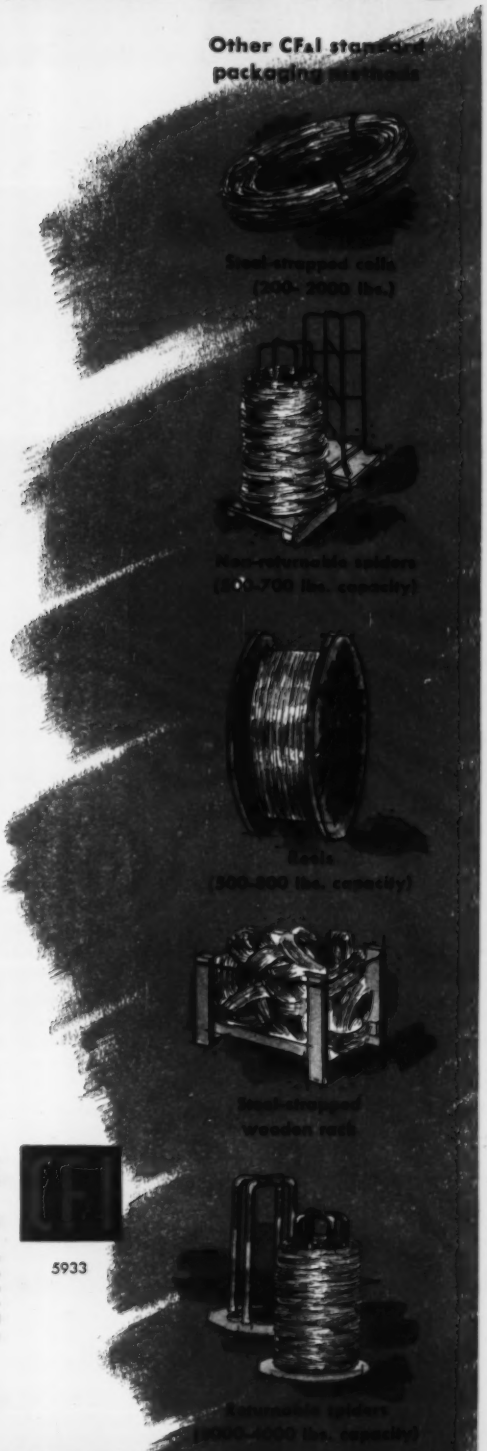
Other CF&I standard packaging methods
Steel-strapped coils (300-2000 lbs.)
Non-returnable spiders (500-700 lbs. capacity)
Reels (500-800 lbs. capacity)
Steel-strapped wooden reels
Returnable spiders (2000-4000 lbs. capacity)

CF&I-WICKWIRE WIRE

THE COLORADO FUEL & IRON CORPORATION

THE COLORADO FUEL AND IRON CORPORATION—Albuquerque • Amarillo • Billings • Boise • Butte Denver • El Paso • Ft. Worth • Houston • Kansas City • Lincoln • Oklahoma City • Phoenix • Pueblo Salt Lake City • Wichita • **PACIFIC COAST DIVISION**—Los Angeles • Oakland • Portland • San Francisco San Leandro • Seattle • Spokane • **WICKWIRE SPENCER STEEL DIVISION**—Atlanta • Boston • Buffalo Chicago • Detroit • New Orleans • New York • Philadelphia • **CF&I OFFICES IN CANADA:** Montreal Toronto • **CANADIAN REPRESENTATIVES AT:** Calgary • Edmonton • Vancouver • Winnipeg

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For Years of Repeat Performance

specify SANDVIK SPRING STEEL

Sandvik Steels have a record of success in applications which demand years of consistent, continuous performance.

In products such as clock and watch springs, compressor valves, piston ring springs, vibrator reeds . . . wherever fatigue life is *vital*, you'll find Sandvik untiring in service.

If your product requires high fatigue life, fine surface finish, uniform physical properties and accurate gauge, try Sandvik.

You can get Sandvik strip steels:

- **In special analyses for specific applications.**
- **Precision-rolled in thicknesses to fit your requirements.**
- **In straight carbon and alloy grades.**
- **Annealed, unannealed or hardened and tempered.**
- **Polished bright, yellow or blue.**
- **With square, round or dressed edges.**
- **Wide range of sizes in stock—also slitting facilities available.**

Ask your nearest Sandvik office for further information or technical assistance.

SANDVIK SWEDISH SPECIALTY STRIP STEELS

are used for Textile Machine Parts such as sinkers, needles, etc. • Band Saws (metal, wood and butcher) • Camera Shutters • Clock and Watch Springs • Compressor Valves • Doctor Blades • Feeler Gauges • Knives such as cigarette knives, surgical, etc. • Razor Blades • Shock Absorbers • A Wide Variety of Springs • Trowels • Reeds: Vibrator, Textile, etc., • Piston Ring Segment and Expanders • and many other applications.

SS-105

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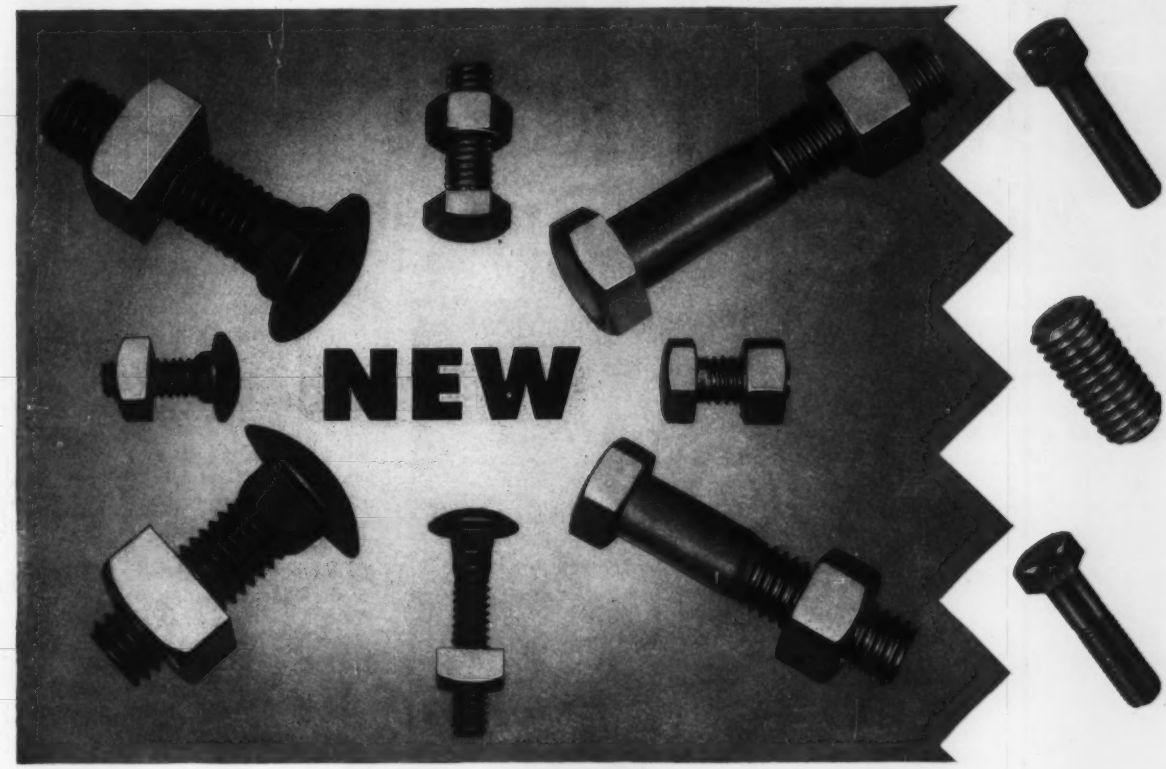
Sandvik Quality Steels



Machine Bolts and Carriage Bolts Now Produced to Stanscrew Quality Standards

Stanscrew presents a new line . . . carriage and hex machine bolts . . . now produced and stocked in a complete selection of more than 500 different sizes. Manufactured under careful quality control methods, they meet the same standards of uniformity and dependability which have made other Stanscrew fasteners a leading choice of American industry for over 80 years.

These new additions bring Stanscrew's complete line to over 5,000 different types and sizes of standard, catalogued fasteners. From this comprehensive selection you can find dependable, economical answers to the overwhelming majority of all your fastener needs.

Your Stanscrew fastener specialist, available through your nearby Stanscrew distributor, can show you many ways these inexpensive standard items will cut your product costs . . . for example, by replacing costly special fasteners.

Each of the over 5,000 different Stanscrew fasteners is always kept in stock at three conveniently located plants. This enables your Stanscrew distributor to provide faster service . . . to be particularly helpful in emergency situations where prompt delivery can mean substantial savings.

So, whatever your fastener requirements, just call your nearby Stanscrew distributor. Or for complete information on Stanscrew's new carriage and machine bolts, simply mail the coupon below.

STANSCREW FASTENERS

STANDARD SCREW COMPANY

CHICAGO | THE CHICAGO SCREW COMPANY, BELLWOOD, ILLINOIS

HMS | HARTFORD MACHINE SCREW COMPANY, HARTFORD, CONNECTICUT

WESTERN | THE WESTERN AUTOMATIC MACHINE SCREW COMPANY, ELYRIA, OHIO

Standard Screw Company
2701 Washington Blvd.
Bellwood, Illinois

Please forward complete information on

☐ Machine bolts ☐ Carriage bolts

Name_____ Title_____

Company_____

Address_____

City_____ State_____

L-D PROCESS
BASIC OXYGEN PROCESS
OXYGEN STEELMAKING

Which is which—How do they differ?

In the rapidly broadening use of oxygen in steelmaking, various names have been applied to differing, and even the same, oxygen steel processes.

To clarify terminology, the American Iron and Steel Institute has assigned the description BASIC OXYGEN PROCESS as the generic term for any basic steelmaking process wherein oxygen gas above atmospheric concentration is a dominant factor. The American Iron and Steel Institute definition is "The term 'basic oxygen steel' is used to define a steel which is considered to be the equivalent of basic open-hearth steel, and whose residual nitrogen content is not in excess of 0.007 per cent."

Specification writing societies including the American Society for Testing Materials and the American Petroleum Institute have applied the same terminology. The American Bureau of Shipping has also used the same general terminology with certain added qualifications.

L-D Process Explained

The L-D PROCESS, for which Kaiser Engineers is the exclusive U.S. licensor, is one of these BASIC OXYGEN PROCESSES and the one in widest use today. Of approximately 70 furnaces operating or building within this classification, 62 are the L-D PROCESS type.

(The remaining 8 are rotating vessel processes which should not be confused with the L-D PROCESS.)

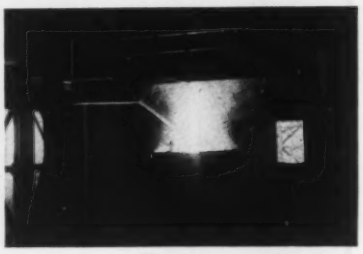
L-D PROCESS is the generally accepted designation of the process where molten pig iron and scrap is subjected to high purity oxygen blown vertically onto its surface in an upright furnace.

L-D PROCESS in action

Charging molten iron

Charging scrap

Blowing



Tapping

L-D Process Advantages

Reasons for world-wide preference of the L-D PROCESS include faster production, better product quality, adaptability to a variety of hot metal analyses, and the low capital investment of about $13 to $15 per annual ingot ton vs. $18 for electric furnaces and $33 for open-hearths.

The L-D PROCESS has also been termed "Linz-Donau" (Linz on the Danube), "Linz-Donawitz," location of the two originating steel plants in Austria and "Linzer Dusenverfahren" which has been interpreted as "Linz Jet Process." Actually, no special significance is attached today in the U. S. to the letters "L-D" other than the fact that they specifically identify, in every part of the world, the generally preferred process for adding new steelmaking facilities.

Complete Steel Plant by KE

Kaiser Engineers designs and builds complete L-D PROCESS installations; also designs and builds complete steel plants including blast furnaces, open-hearth and electric furnace installations, sinter plants, rolling mills, pipe mills, by-products plants, ore beneficiation, air pollution control and water treatment facilities.

For complete new-plant or expansion service, from process design to start-up day, KE offers experience coupled with traditional Kaiser ingenuity. The L-D PROCESS is an example of KE's capability in the application of new developments to the steel industry.

For full information on L-D PROCESS or other KE services in steel plant design and construction, call or write KE at:

Pittsburgh, 330 Grant St., AT 1-7992
New York, 300 Park Ave., PL 9-1100
Oakland, 1924 Broadway, CR 1-2211

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4861

CALENDAR
OF MEETINGS

Feb. 2-6, American Society for Testing Materials: Committee week, Penn-Sheraton Hotel, Pittsburgh. Society's address: 1916 Race St., Philadelphia 3, Pa. Executive secretary: Robert J. Painter.

Feb. 2-7, American Institute of Electrical Engineers: Winter general meeting, Statler-Hilton and Sheraton-McAlpin Hotels, New York. Institute's address: 33 W. 39th St., New York 18, N. Y. Secretary: N. S. Hibshman.

Feb. 3-4, Grinding Wheel Institute and Abrasive Grain Association: Midwinter meeting, Statler-Hilton Hotel, Buffalo. Information: Thomas Associates, 2130 Keith Bldg., Cleveland 15, Ohio. Business manager: W. B. Thomas.

Feb. 3-5, Society of the Plastics Industry Inc.: Reinforced Plastics Div.'s annual technical and management conference, Edgewater Beach Hotel, Chicago. Society's address: 250 Park Ave., New York 17, N. Y. Executive vice president: William T. Cruse.

Feb. 8-9, National Industrial Distributors' Association: Pacific coast industrial distributors conference, Statler-Hilton Hotel, Los Angeles. Association's address: 1900 Arch St., Philadelphia 3, Pa. Executive secretary: Robert C. Fernley.

Feb. 9-11, American Management Association: Marketing conference, Statler-Hilton Hotel, New York. Association's address: 1515 Broadway, New York 36, N. Y. Marketing division's manager: Coleman Lee Finkel.

Feb. 15-19, American Institute of Mining, Metallurgical & Petroleum Engineers Inc.: Annual meeting, St. Francis, Sheraton-Palace, and Sir Francis Drake Hotels, San Francisco. Institute's address: 29 W. 39th St., New York 18, N. Y. Secretary: E. O. Kirkendall.

Feb. 15-21, Association of Steel Distributors Inc.: Annual convention, British Colonial Hotel, Nassau, Bahama Islands. Association's address: 29 Broadway, New York 6, N. Y. Counsel: Morris Rosoff.

Feb. 16-18, American Management Association: Midwinter personnel conference, Palmer House, Chicago. Association's address: 1515 Broadway, New York 36, N. Y. Personnel division's manager: John D. Staley.

Feb. 17-19, Caster & Floor Truck Manufacturers Association: Winter meeting, St. Moritz Hotel, New York. Association's address: 27 E. Monroe St., Chicago 3, Ill. Executive secretary: Harry P. Dolan.

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This Series No. 412 Steelweld Shear is kept busy cutting plate of all thicknesses from 22 gauge to 3/8 inch in lengths up to 12 feet. Note the electric foot switch which helps ease and speed the work.

One of the big reasons why knives stay sharp longer on Steelweld Shears is the simplicity with which knife clearance can be adjusted for every plate thickness. It's merely a matter of turning a hand crank until the gauge pointer is on the proper figure. No bolts to loosen. No need of a feeler gauge.

"It's a shame," said the shop foreman at Stephens-Adamson Mfg. Co., Los Angeles, California, "but since installing our Steelweld Shear the knife-sharpening man has been crying because we have no work for him."

After months of continuous operation, eight hours a day, usually six days a week, inspection of cut pieces indicates the knives are practically as sharp as new. Parts cut have no burrs and are straight and true. Even when the cutting edges of the knives finally become dulled, there are three more cutting edges ready for use as all four corners of each knife are prepared for shearing.

Stephens-Adamson like their Steelweld Shear and are happy over its operation. It plays an important role in the manufacture of screens, elevators and conveyors which are the principal products of this large West-coast plant. In their words, it is "heavy, well built and dependable. We know it is reliable and always ready to handle our work from day to day."

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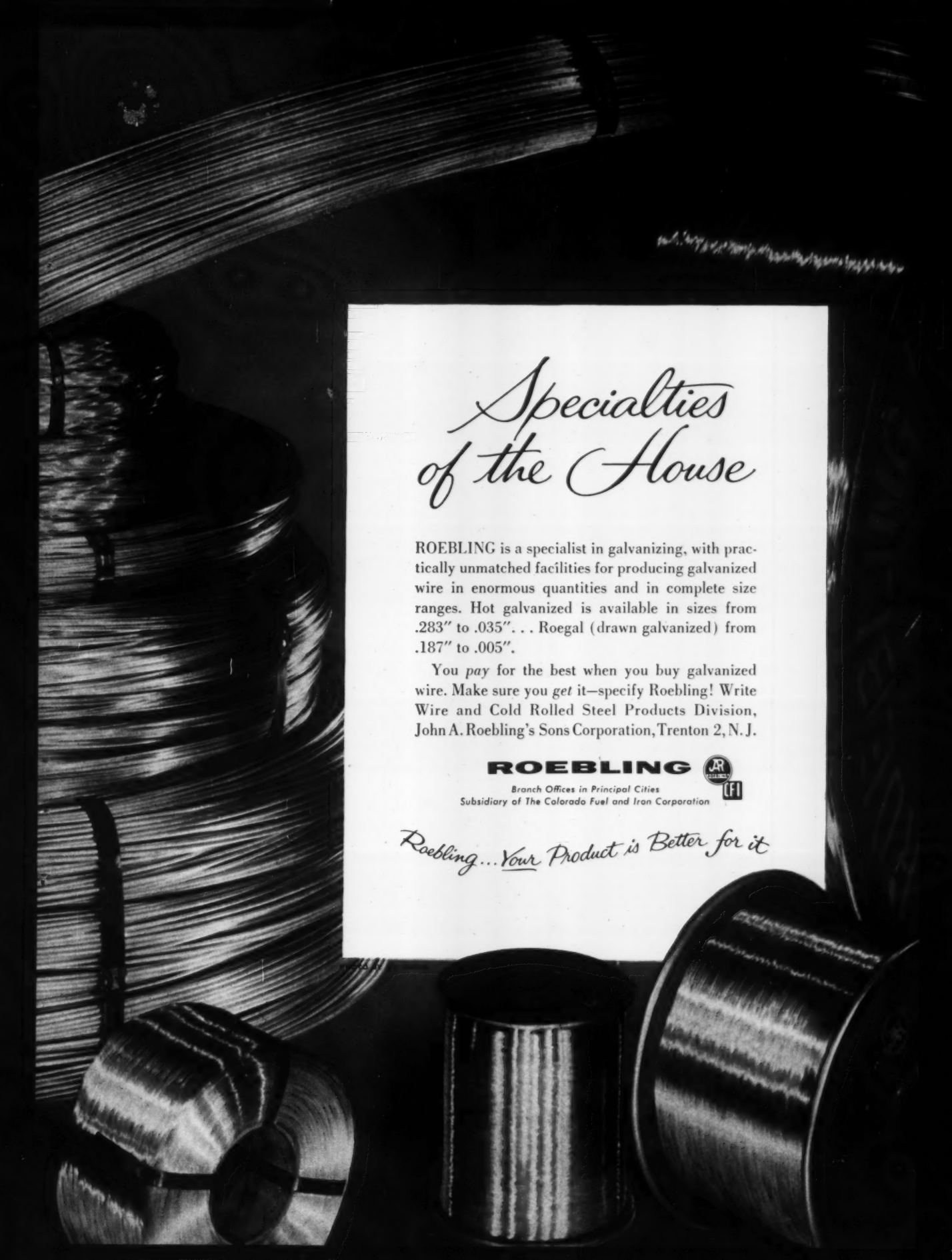

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GUIDEROL® needle roller bearings save space and simplify design

. . . especially where their greater capacity can reduce the size and cost of an adequate bearing housing. More and more designers are specifying McGill GUIDEROL bearings to carry heavier loads dependably with smaller bearings.

GUIDEROL bearings combine full type bearing capacity with center guided rollers that limit skewing and eliminate the possibility of binding under average misalignment. Especially suited to vertical mounting.

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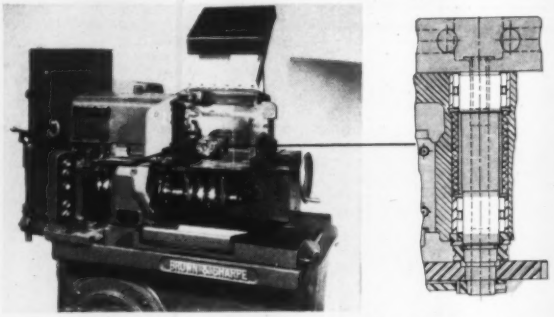
GUIDEROL bearings were selected to retain minimum clearance and maximum load capacity. In addition to meeting these requirements, the GUIDEROL eliminated production problems involved in the use of the scraped tapered bushings. The bearings support the turret during cutting and indexing operations. GUIDEROL design also satisfies the need for maintaining accurate alignment throughout long machine life.



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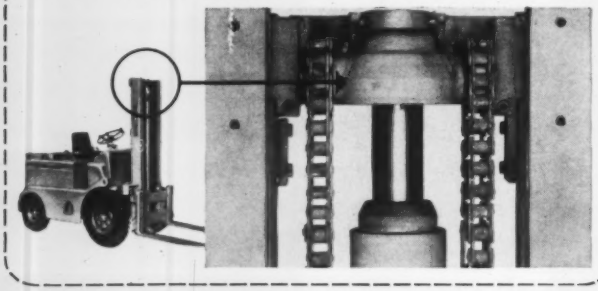
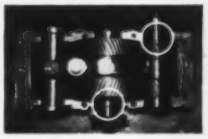


Design simplified in mine machine transmission



Manufactured by the LONG Company, "PIGLOADER" coal loading machines feature full independent crawler control with a single motor. Application of GUIDEROL bearings on the tram clutch shaft is typical of other McGill bearing applications on the loader. GUIDEROL CT series bearings are used on the output end of the shaft to handle purely radial loads in small radial space. On the opposite end of the shaft, double row ball bearings handle combined thrust and radial loads. This combination eliminates the need for complicated adjustments. Use of a roller bearing, which has the same dimensions as the thrust bearing, accomplishes the design purpose with minimum machining variation in the transmission case. The GUIDEROL equipped tram transmissions allow each crawler to operate independently, a substantial design improvement.

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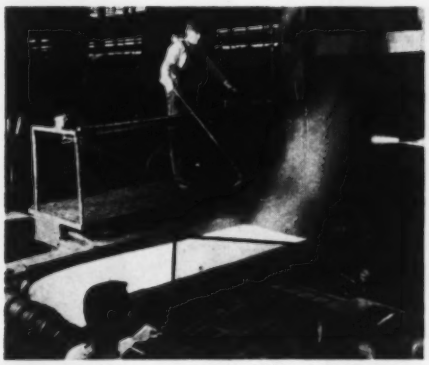

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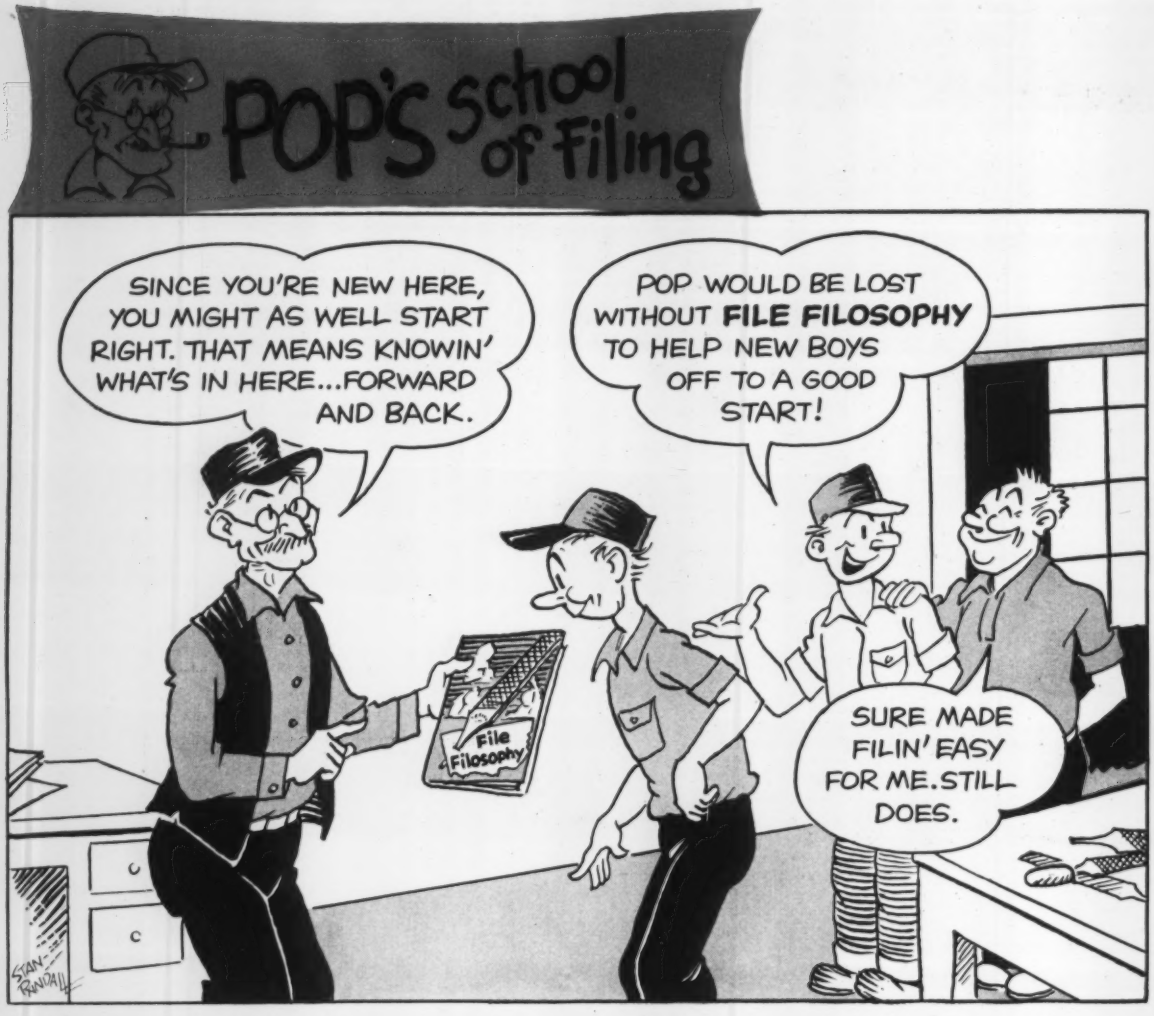
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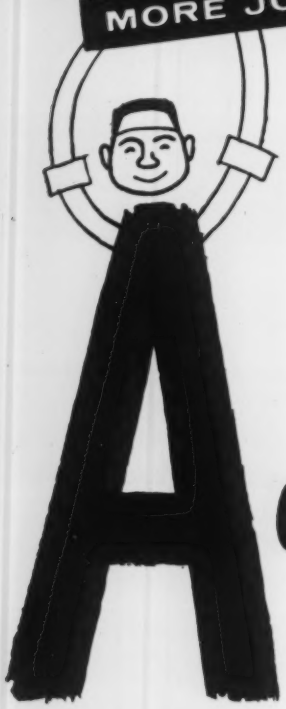

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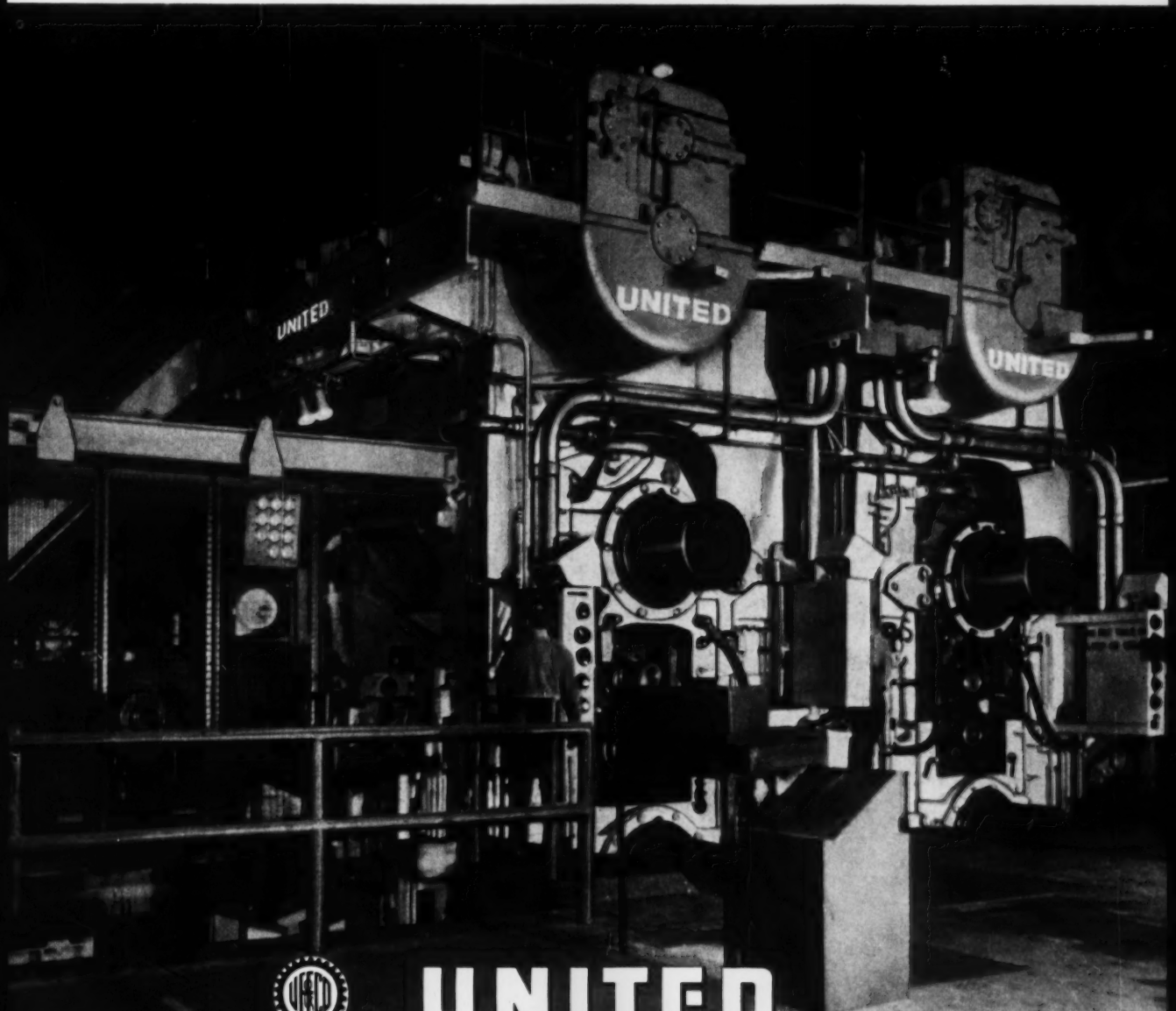

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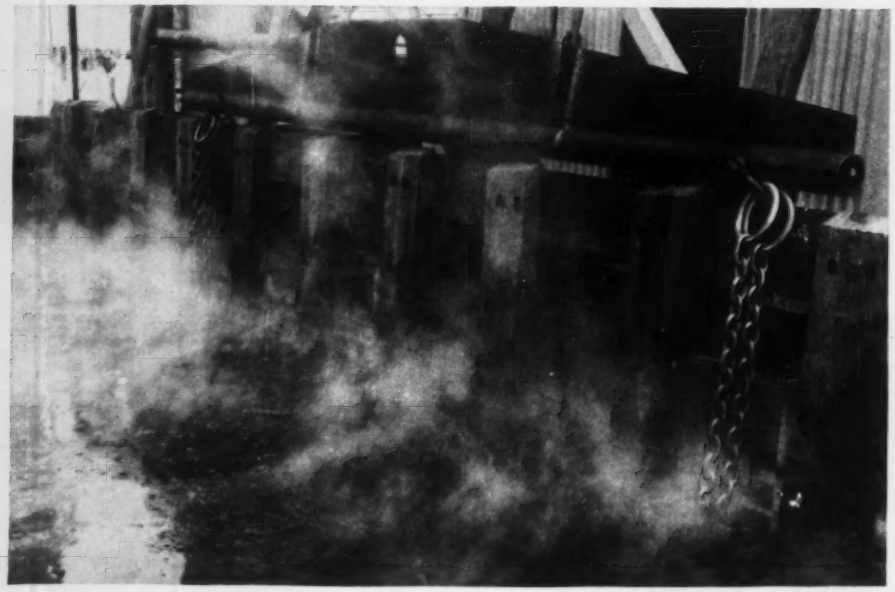

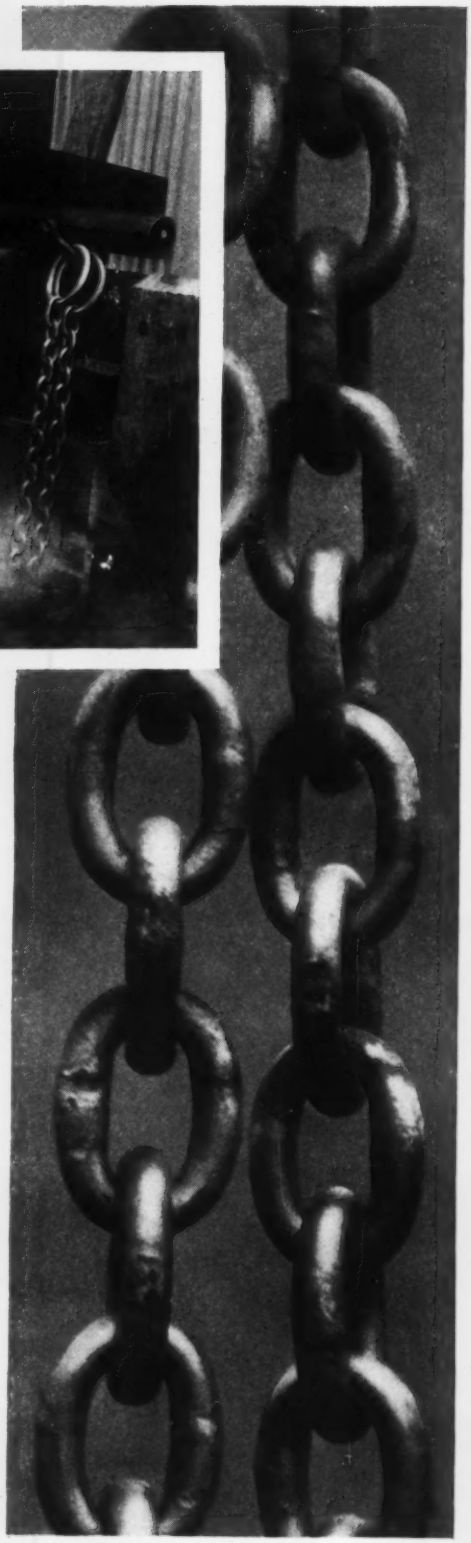

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They resist corrosion, retain high strength, ductility

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You'd never know that they've been handling two-ton loads five days a week, for seven years in a 5% sulfuric acid pickling solution at Hammond Iron Works, Bristol, Pennsylvania.

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Automakers Bid for More Missilework

Autodom's Big Three, now taking 7 to 10 per cent of the nation's missile expenditures, hope to garner an additional 5 per cent in the next five years. While the Pentagon questions the carmakers' willingness to invest huge sums needed for preliminary R&D in the missile field, the automakers are methodically readying their organizations for a major move into the field. Significance: To defense subcontractors, it means new and larger sources for work. To firms eying defensework as a possible market, the car companies offer some tips on procedure (Page 45). All three have built up sizable backlogs of facilities and experience. Ford, for example, is getting ready for space projects via its subsidiary, Aeronutronic Systems Inc.

Bethlehem-Youngstown Won't Appeal Merger Case

Contrary to expectations, Bethlehem Steel Corp. and Youngstown Sheet & Tube Co., last Tuesday announced they would not appeal Judge Weinfeld's decision restraining their merger. A desire to go ahead with individual plans and the remote possibility of an even broader antimerger opinion from the Supreme Court were the probable reasons, say industry observers (Page 52).

Delivery Problems Begin

You'll have to allow longer leadtimes on most of your material orders now than you have for quite a while. Steel users are building stocks but accelerating production is holding them below desired levels. And buying in anticipation of a steel strike and price increase is already underway. About 1 in 5 buyers of galvanized sheets and 1 in 10 buyers of heavy plates complain about delivery (Page 117).

For A-Plane, Long Time Till Reality

Defense Secretary Neil McElroy reports that we'll have more than $1 billion invested in our atomic plane program by the end of fiscal 1960, but the big bird is still a long way from getting off the ground. About the same amount of money will be spent in fiscal '60 as in fiscal '59 if the budget stands as is. A new plan emphasizes engine research at the expense of airframework. Lockheed and Convair, the airframe's contractors, are reported prepared for a drastic cut in funds. General Electric and Pratt & Whitney, the engine developers, expect to keep up their present pace. Brighter note: A committee

has been formed to study the plane's human safety characteristics. Confusing note: The Air Force reports that an A-plane, capable of firing missiles, has a "definite place" in its plans.

How States Rank in Missilework

California holds $5.5 billion worth of prime contracts for four big missiles (Atlas, Thor, Polaris, Minuteman) and $550 million for five small missiles (Falcon, Genie, Terrier, Nike, Sparrow). New York has no prime contracts. So reports Harold Gleason, New York banker. How other states fare: Colorado—$1.8 billion (Titan); Utah—$250 million (Minuteman); Washington—$200 million (Bomarc); Michigan and Indiana—$350 million (Jupiter and Redstone) plus $100 million (Talos); Texas—$100 million (Regulus); Florida—$100 million (Mace); Connecticut—$250 million (Minuteman); Massachusetts—$150 million (Sparrow and Hawk); Pennsylvania—$100 million (Sidewinder).

Where New Steel Capacity Is Going

Expect the trend to oxygen steelmaking to intensify. More than 40 per cent of the 6,891,100 tons of capacity added last year is in that category. Twenty-six companies contributed to the over-all increase (Page 50). Biggest gains came in Indiana (1,635,000 additional tons), Pennsylvania (1,517,000), California (1,396,800), Illinois (836,760), Michigan (766,000), Ohio (745,000), and Texas (141,700).

How Russia Sells Machine Tools

Expect U. S. machine tool builders to pressure the government to insure their credit extensions to foreign buyers. It would help them compete with the Soviet Union. Russia not only underprices U. S. makers but offers credit up to 20 years at 2 per cent interest, reports Ludlow King, executive vice president, National Machine Tool Builders Association. He says Russia made 12 big sales in South America that way and is using such tactics in Europe.

Floods Cripple Midwest

This aerial view of Sharon, Pa., was a typical sight in the Midwest last week as spectacular flash floods choked the area's industry (Page 48). Sharon Steel Corp., deluged by the rampaging Shenango River, had to clear up to 4 in. of ice out of its plant. Floodwaters hit five Republic Steel Corp. plants.

Nonferrous News Notes

The 1 cent a pound lead price reduction (to 12 cents) on Jan. 21 may be followed by another dip; foreign lead is still 1 cent cheaper after freight

and duty . . . Harvey Aluminum Co., newest primary aluminum producer, is operating at full capacity (54,000 tons annually) . . . Alcoa's Point Comfort, Tex., alumina plant (annual capacity: 750,000 tons) will initiate production today . . . Domestic custom smelters boosted copper prices 0.5 cents.

Alcoa's Wilson Sees Nonferrous Sales Uptrend

In 1959 (vs. '58), expect: 1. Aluminum shipments to climb at least 10 per cent, maybe 15 to 20 per cent. 2. Copper shipments to rise 10 to 15 per cent. 3. Lead shipments to increase 5 to 10 per cent. 4. Zinc shipments to climb more than 10 per cent. 5. Magnesium demand to improve as much as 20 per cent. 6. Titanium sales to rise. Those are the predictions of I. W. Wilson, chairman, Aluminum Co. of America. Alcoa recently agreed to set aside 24,000 tons of aluminum annually for small users; expect other producers to follow (Page 140).

Steel Earnings Shoot Up

Look for the steel industry's earnings in 1959's first half to climb back to prerecession levels. Early reports indicate '58's last quarter brought the best net profits since early '57:

	Last Quarter		Year	
	1958	1957	1958	1957
Alan Wood Steel Co.	$1,231,000	$760,500	$2,109,000	$2,054,000
Armco Steel Corp.	23,399,972	12,114,205	57,233,314	68,297,928
Carpenter Steel Co.	894,888	842,830	n.a.	n.a.
Colorado Fuel & Iron Corp.	866,788	2,036,628	2,147,223	14,236,851
Inland Steel Co.	n.a.	n.a.	47,869,042	58,876,875
McLouth Steel Corp.	n.a.	n.a.	9,998,000	9,410,000
Pittsburgh Steel Co.	959,000	(a) 120,000	(a) 866,000	4,155,000
Republic Steel Corp.	22,832,437	11,975,228	61,921,680	85,014,422
U. S. Steel Corp.	90,728,989	90,096,731	301,302,643	419,406,956
Youngstown Sheet & Tube Co.	n.a.	n.a.	21,501,320	42,508,579

n.a.=Not available.
(a) Loss.

Radio Controlled Automation Offers Big Savings

You may want to consider guiding an interrupted operation via radio. Engineers at Timken Roller Bearing Co., Canton, Ohio, are doing it—and they paid off an investment of nearly $200,000 in one year. The application: Cycling automatic cranes through a five step phosphating sequence. The product: Huge mill bearings (Page 82). But smaller items can be handled, too.

More Coal Pipelines May Be Built

Coal, transportation, steel, and utility people are closely following the operation of the recently opened coal pipeline in eastern Ohio. Reason: Its suc-

cess could lead to the construction of more such facilities. The American Iron & Steel Institute reports the pipeline is cutting transportation costs by nearly 35 per cent—an annual saving of more than $1 million. The $13.5 million line is expected to move 1,350,000 tons of coal annually from Consolidation Coal Co. in Belmont County, Ohio, to Cleveland Electric Illuminating Co.'s Eastlake, Ohio, generating plant.

What Do Sales Calls Cost You?

It probably costs you $50 to $60 each time a salesman calls on a prospective customer. That's what Whiting Corp., Harvey, Ill., discovered from a five-year study of industrial selling costs. The firm's weighted average selling cost equaled 4.86 per cent of every sales dollar. At that rate, salesmen must be topnotch; the mediocre can't be tolerated. You can figure your selling expense from this information: 1. Daily or weekly call reports. 2. Separate accounting of salaries, travel, rent, telephone, and other costs for each district office (Page 57).

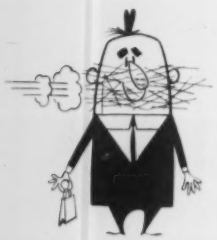
Ceramic Answers High Temperature Needs

Avcoite, a reinforced ceramic just unveiled by Avco Mfg. Co., can be fabricated for parts like rocket nozzles, where materials must retain their dimensions at 5000° F. Avco reports it has made a normally brittle ceramic "quasi ductile." More high temperature materials are coming (Page 96).

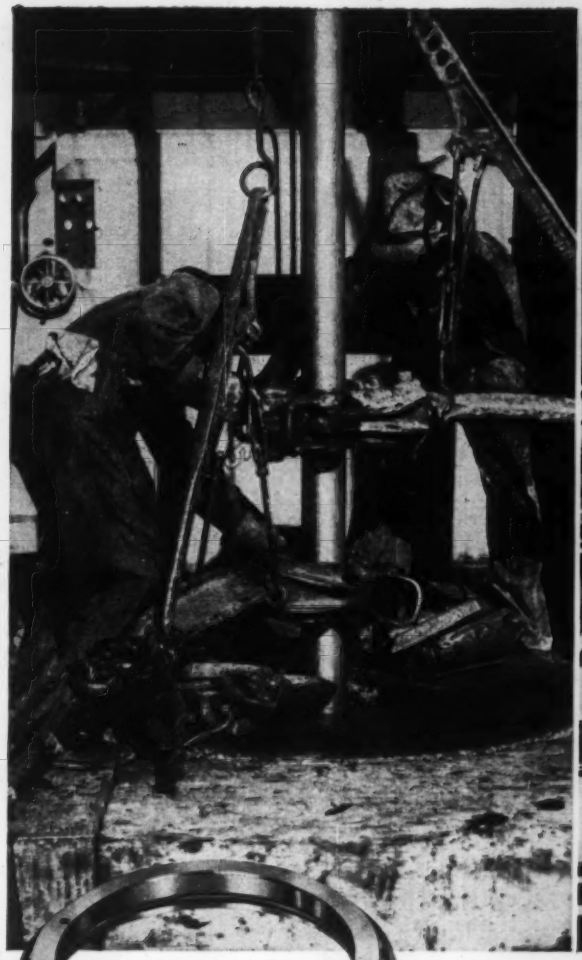
New "Yankee Go Home" Signs Showing

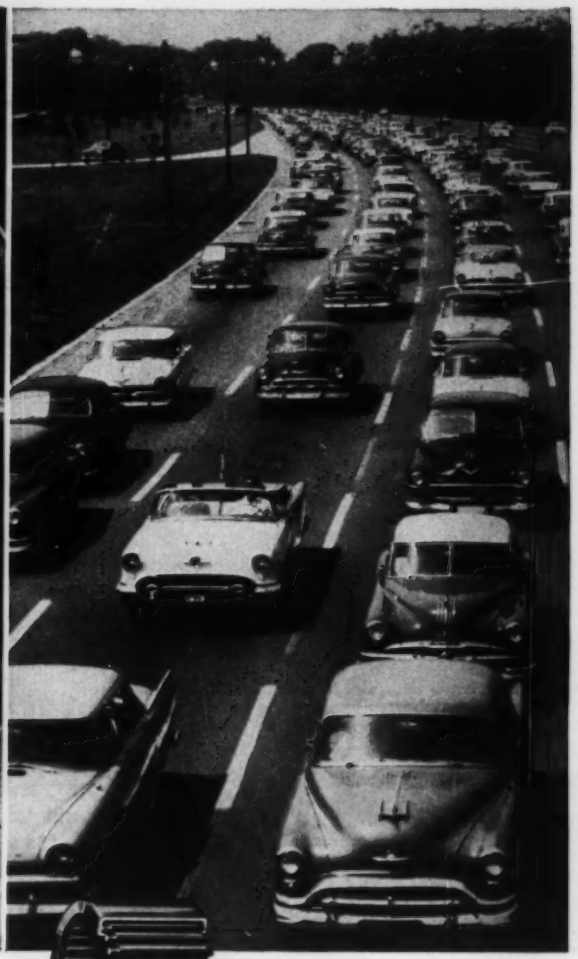
American businessmen aren't alone in their concern about imports. Japanese businessmen are upset about their country's rising imports of Alaskan products—lumber, pulp, coal, iron, and oil. The complaints are similar to those we hear about rising imports from Japan. Japanese investors are considering importing coking coal from Alaska to aid their growing steel industry.

Straws in the Wind

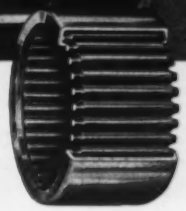


Sen. Estes Kefauver (D., Tenn.) is again seeking to make headlines with "administered prices"; his Antitrust Subcommittee started a new round of hearings last week . . . Electronics sales will jump 11 per cent this year, says John L. Burns, president, Radio Corp. of America . . . Ford plans to build 125,300 cars this month—31 per cent more than it did in the year-ago month . . . Russia will limit tin exports outside the Iron Curtain to 13,500 tons this year . . . A Carrier Corp. officer says atomic powered air conditioning and refrigeration equipment will be made "in the near future" . . . The recent price increase on original equipment tires—first since late 1957—is likely to be a forerunner of hikes in retail tire prices later this year . . . December, 1958, shipments of gas water heaters were up 21.1 per cent from those of the year-earlier month . . . Near-record sales of home laundry appliances during '58's last quarter boosted sales for the year to within 2 per cent of the 1957 total.





from drilling rigs...



to automobiles

Torrington makes the right anti-friction bearing for every basic need!

In the oil fields where your gasoline originates, the need may be for a special Torrington Angular Contact Rotary Table Bearing to support thousands of feet of whirling drill string. In your car, it may be a compact Torrington Needle Bearing to smooth your steering.

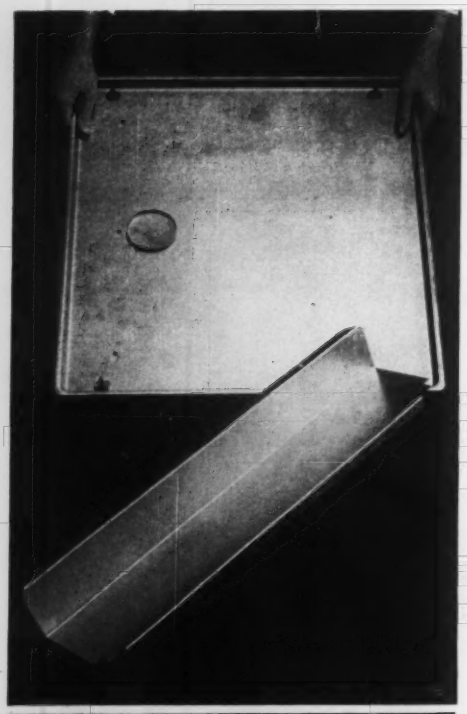
Between these two examples lie all kinds of requirements. To meet this broad range of needs, Torrington makes every basic type of anti-friction bearing.

You can be confident that engineering recommendations from Torrington will bring the broadest experience to bear on your specific application requirements. For help in developing the *right* anti-friction application for your product, rely on your Torrington representative. **The Torrington Company, Torrington, Conn. —and South Bend 21, Ind.**

TORRINGTON BEARINGS

District Offices and Distributors in Principal Cities of United States and Canada

NEEDLE • SPHERICAL ROLLER • TAPERED ROLLER • CYLINDRICAL ROLLER • BALL • NEEDLE ROLLERS • THRUST



SAVED: $2.50 A UNIT

With 4 Heat-Resisting Parts of Armco ALUMINIZED STEEL

Looking for a low-cost metal to "handle" high heat?

Read what Mr. J. Jarmuth, Plant Superintendent, Wells Manufacturing Company, San Francisco, says about Armco ALUMINIZED STEEL Type 1 and cost savings in commercial frying units:

"Every item in our Counter-Mate line contains ALUMINIZED STEEL. Its advantages in high-heat applications are obvious, but we have been able to obtain equally important benefits from the cost standpoint.

"Neither plated nor baked enamel parts on concealed or semi-concealed details of our units have been completely satisfactory. Both have been far more expensive than ALUMINIZED STEEL.

"For example, on our F-77 double fryer we have improved the durability of the product by switching to ALUMINIZED STEEL for control box backs and bottoms, shell bases, and outlet boxes. At the same time, we have effected a net saving of $2.50 a unit and have eliminated the coordination problem with local plating shops.

"As we become more and more familiar with fabricating techniques in forming, drawing, and spot-welding ALUMINIZED STEEL, we are expanding our use and are confident that it is a major factor in the successful quest for a better product at lower cost."

Perhaps Armco ALUMINIZED STEEL is a low-cost answer for heat-resisting parts of your product. Fill in and mail coupon for complete information.

New steels are born at Armco

ARMCO STEEL CORPORATION
7018 Curtis Street, Middletown, Ohio

Send me more data about Armco ALUMINIZED STEEL Type 1

We make_____

Name_____ Title_____

Firm_____

Street_____

City_____ Zone____ State_____

ARMCO STEEL

Armco Division • Sheffield Division • The National Supply Company • Armco Drainage & Metal Products, Inc. • The Armco International Corporation • Union Wire Rope Corporation • Southwest Steel Products

Prosperity a la McDonald

As a warm-up to negotiating a new contract with the steel industry (effective July 1), President David J. McDonald of the United Steelworkers of America is conducting a newspaper advertising campaign addressed to American business.

It is designed to show how much more prosperity will be provided by the $1 billion wage package he hopes to get for workers.

To the heads of automobile companies he says:

"Automobile manufacturers must realize now that their profits come only from people. New ideas, new styling, new models in the automobile industry don't mean a thing unless the people . . . a lot of people . . . are financially able to buy a new car.

"One million two hundred fifty thousand steelworkers will soon negotiate their 1959 wage contract. How well they do with their '59 model will almost certainly decide how you'll do with yours."

To theater owners he says:

"The neighborhood theater owner usually does not get the family grocery or dentist money as the price of admission. Rather, he expects only a share of that money saved by the family after ordinary living expenses.

"In fact, every extra dollar in the pay envelope means more business and extra profits to some small businessman either today, next week, or next year.

"One million two hundred fifty thousand steelworkers and their families buy a lot of theater tickets. How many and how often depend on their ability to buy, and their ability to buy depends on the size and security of their pay checks."

Reading between the lines, it is quite apparent that Mr. McDonald's powerful propaganda is really addressed to the public, not to management of large and small business.

The public no longer feels kindly toward the unions, including Mr. McDonald's. Twenty years ago, the unions were fighting for basic rights of the workingman.

Today, the unions are engaging in intramural battles to see which one can get still more money for workers who already enjoy the highest pay and the best working conditions in the world.

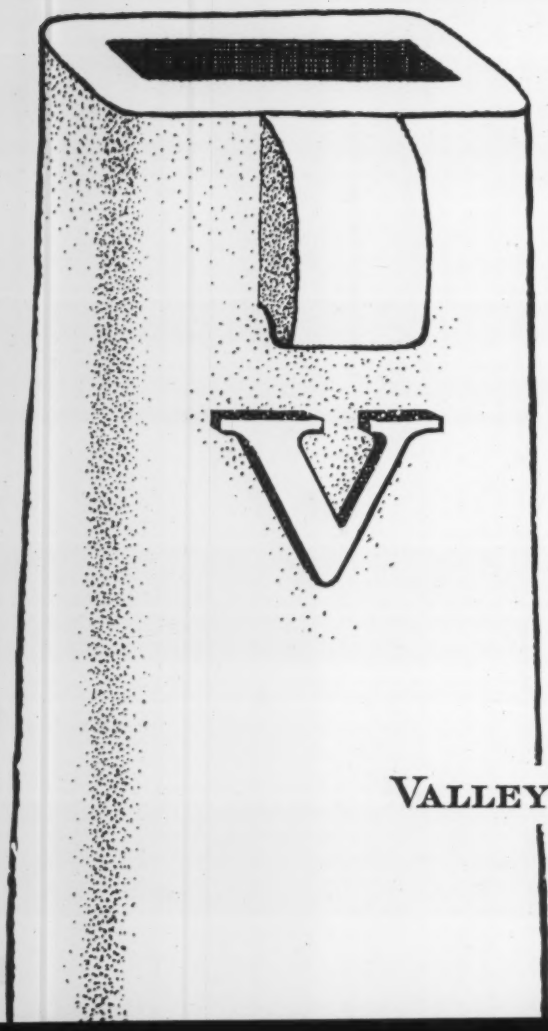
Mr. McDonald knows perfectly well that a $1 billion package means higher steel prices, higher automobile prices, and higher theater ticket prices. It is another step along the road of inflation.

The steelworker really doesn't win. In fact, no one does.

That is prosperity a la McDonald!

Irwin H. Such

EDITOR-IN-CHIEF



Tomorrow

we'll harness the energy of the sun .....

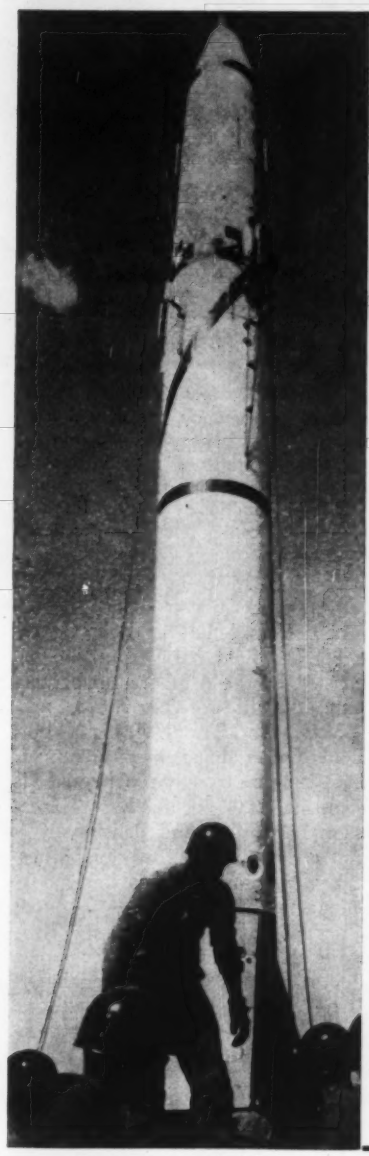
but even then

steel will be poured into

VALLEY INGOT MOULDS

VALLEY MOULD AND IRON CORPORATION

GENERAL OFFICES: Hubbard, Ohio
WESTERN OFFICE: Chicago, Illinois
NORTHERN OFFICE: Cleveland, Ohio



U. S. Army's Redstone

Automakers Want Bigger Slice

What They Have Now

GENERAL MOTORS CORP.

Allison Div.

- Powerplant, handling, and service equipment for Regulus I.
- Propulsion unit for Matador.
- Two classified projects.

AC Spark Plug Div.

- Guidance and ground support equipment for Mace, Matador, and Thor.
- Three classified projects dealing with new guidance systems and space research.

New Departure Div.

- Bearing for Nike system.

FORD MOTOR CO.

Aeronutronic Systems Inc.

- R&D for high precision orbit determination for Jupiter and special projects.
- Study contract for Pacific Missile Range instrumentation requirements.
- Development contract for tactical Army operations center to be operational by 1968.
- 32 Government supported R&D and development contracts (classified).
- Five contracts supported by Ford Motor Co..

CHRYSLER CORP.

Missile Div.

- Jupiter fuselage and assembly, handling and service equipment.
- R&D on high precision orbit determination for Jupiter.
- Redstone airframes.
- Two classified projects.

Sources: Department of Defense, auto companies, Association of Missile & Rocket Industries.

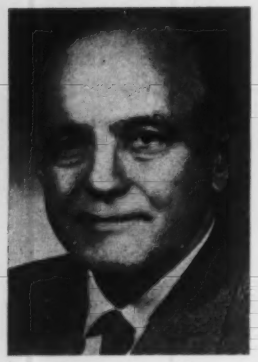
Detroit Bids for More Missile Jobs

AUTO COMPANIES are campaigning to get more missile business. If they succeed, it may mean more subcontract work for your company. It will also pay to watch their tactics. You may get some ideas on how you can crack the Space Age market.

Aircraft, chemical, and electronic industries have already made their mark in the missile and space business, but automakers still have to prove their producibility.

Aircraft firms are plowing back a bigger share of defense contract profits into missile research, but the Pentagon still feels auto company top brass lack interest and imagination for the Space Age. Washington's attitude may stem from lack of knowledge about the industry's potential.

• **Can Do** — Even the Pentagon doesn't discount the job Big Three divisions have done with the missile contracts they have won. Automakers assert they'd like a bigger slice of the market. One official guesses the three firms are taking



SHERROD E. SKINNER
GM v.p., Accessory Group

"Making autos is and will be our primary business, but we think that through our AC Spark Plug and Allison Divisions we have demonstrated capabilities in the missile field."

IRVING J. MINETT
in charge, Chrysler Defense Group

"The automotive industry . . . is an important, active, current source of technology and of the weapons, supplies, and essential services going to our armed forces."

REP. GERALD FORD
R., Mich.

"The automobile companies have shown they can compete in missilework. They have a challenge to move farther into this field to compete with aircraft and other companies."

GERALD J. LYNCH
Aeronutronic president

"In new R&D contracts, our company has moved from 150th to 48th place in the industry. Our interest is indicated by . . . a multimillion dollar research center under construction."

between 7 and 10 per cent of present missile expenditures. They'd like to up that by 5 per cent in the next five years—not counting the defensework they do on conventional vehicles.

Investment Isn't Small

Ford Motor Co., General Motors Corp., and Chrysler Corp. have built up sizable backlogs of facilities and experience. Ford set up Aeronutronic Systems Inc., Glendale, Calif., in 1956 as an independent subsidiary for research, development, and production of military systems and components primarily for missile and space work.

As of last May, Ford owned 94.3 per cent of Aeronutronic's stock and its investment totaled $5 million. Ford is committed to spend another $4 million by 1961 and will invest even more if Aeronutronic goes ahead with its expansion at Newport Beach, Calif.

Ford expects that Aeronutronic will develop systems projects and their manufacturing techniques. The work will be done either by the subsidiary or by Ford plants that may be equipped for the job. By partially bypassing the missile business, Aeronutronic can be ready to take a long lead in space projects. Right now, the company can cash in on some commercial aspects of its computer developments.

Aeronutronic has four basic divisions: Computer, space technology, tactical weapons systems, and range systems. It also has a long range information gathering group in its Office of Advanced Research. It can draw on the engineering, research, and manufacturing facilities of its parent company. Its staff boasts some of the top names in the missile-space field. The subsidiary's computer and tactical weapon divisions are ready to move into production on some contracts. Space technology still is largely in the R&D contract phase.

• **Chrysler's Setup**—In 1952, the Army was looking for someone to build Redstone airframes. Chrysler had the knowhow, and the cancellation of a contract for Navy jet engines provided facilities. The Army leased the Navy plant and turned it back to Chrysler. It proved that some auto production techniques could be applied to airframe construction. When Jupiter was phased in, Chrysler was a natural for the job.

Now Chrysler's defense group is hurting due to the phasing out of Redstone and Jupiter by 1961. But Chrysler stands a good chance of getting part of the Army's Pershing, a solid fueled bird that will replace the Redstone.

The company is also reported to be beyond the feasibility stage in proposals to build the Bold Orion, a bomber fired ballistic missile requested by the Air Force to perpetuate the life of its B-52s, and B-58s. No formal proposals on Bold Orion have been accepted, but it appears that Chrysler is counting on it as another replacement for Jupiter and Redstone.

To demonstrate its capabilities, Chrysler staged a press tour of its missile facilities last week. Its pitch: Chrysler has proved with the Redstone that it can handle a complex device with 90 per cent reliability. It has met all its delivery deadlines. It has contributed technical developments to the missile field. It has subcontracted about 60 per cent of the work.

• **GM's Philosophy**—Allison Div., Indianapolis, has long been thought of as being more in aircraft and missiles than in autos, despite its affiliation with General Motors. The Air Force initially approached Allison when it was seeking propulsion systems for its Thor missile. Even with this background, Washington sources claim the division was "flabbergasted" when it learned it had lost its bid for part of the Minuteman contract (a solid fueled ICBM that's supposed to replace the liquid fueled Atlas by 1962-63). Allison's boss, E. B. Newill, asserted the division had been "actively" seeking more missile business be-

fore it was turned down. Now it will be "avid" in its pursuit of prime propulsion contracts.

AC Spark Plug Div. was granted contracts for developing its inertial guidance system as a result of work it did on an inertial bomb sight during the Korean War. GM has invested heavily in AC Milwaukee plants where guidance systems for Thor and Mace are built on a semiproduction basis. AC lost the guidance system on the Minuteman, but it reportedly has contracts to develop several other guidance systems, one of which may be used in space vehicles.

AC's and Allison's efforts are closely watched by Sherrod E. Skinner, GM vice president in charge of the accessory group. Mr. Skinner indicates the corporate policy toward missilework is one of "keen interest," but GM will place most of the responsibility on a key division (Allison seems to be it) and let it direct and utilize all the research and technological resources the corporation has on tap.

Plenty To Offer

Besides work on contracts, automakers have made other contributions.

When Chrysler lost an important contract, it asked the Air Force where and how it failed. Result: This service branch has established briefings for unsuccessful bidders to show them where they're weak and how to improve.

Using automotive knowhow, AC has proved that complicated guidance systems with tolerances up to 50 millionths can be built on a production line basis. Chrysler has done the same with missile airframes.

A member of the Defense Deptment's procurement staff admits that when missilemen were looking for someone with metallurgical knowledge of metals and fabrication techniques for injection nozzles, they found it at Ford.

All Kinds of Competition

Even with this background of producibility, here's a story that shows carbuilders still have a selling job to do. The tremendous pressure on the auto industry is evidenced by the scramble for the recently awarded $15 million for the first space capsule (McDonnell Aircraft Corp. got it). Of 38 firms queried by the National Aeronautics & Space Administration, 12 responded with definite proposals. Not one was an auto company, although the Big Three were all in on the original list of 38.

A spokesman for one of the firms told STEEL his company heard about the chance to bid on the space capsule three days before the first briefing session at NASA. Other firms, including all the major aircraft companies, had 30 to 45 days' notice of the briefing. NASA explained it didn't think the auto boys were too interested in space and hadn't bothered to give them much notice.

Hidden Persuaders

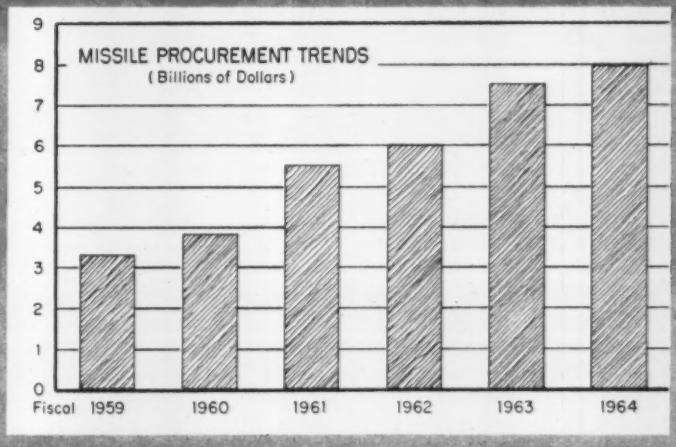
Automakers can expect some Congressional help. Sen. Patrick MacNamara (D., Mich.), told STEEL he'll do all he can to help bring more industry to Michigan. This could mean a lot to Chrysler Corp., particularly if it can be shown that small businesses won't be hurt, may be helped, by more automotive participation.

Rep. Gerald R. Ford Jr. (R., Mich.), member of the potent Appropriations Committee, says automakers have a challenge and an obligation to contribute their knowledge and capabilities to the missile and space field. One of the legislators points out that a certain amount of "judicious needling" in committees can accomplish a lot.

• **Expectations**—Look for heavier investments in facilities and manpower within present automotive missile groups and divisions, more selling campaigns on what auto divisions have accomplished and what they can do. Particular emphasis will be placed on the fact that top management is backing the missile pitch.

One industry man sums it up: "We aren't going to beg for defense business because we don't have to, but if we can make tanks and trucks and all these electronic gadgets we use in automotive research, we can make missiles. We're out to prove that."

Can Automakers Keep Their 10 Per Cent Slice of Burgeoning Missile Market?



***Starting with fiscal 1960 budget, funds spent for missile production are recorded under the Pentagon's procurement account only. R&D expenditures for missile development are not included in this forecast.**

NEA

The raging Shenango River engulfs the business district of Sharon, Pa.

Industry in Fast Comeback After Onslaught of Floods

AS SCORES of communities from Indiana east into New York State last week were digging themselves out from under the ice and debris of widespread flash flooding, industry was pouring the mud out of its boots and going back to work.

Only a few metalworking plants suffered physical damage or prolonged shutdowns but many thousands of production workers were unoccupied for a day or so. The only other bright spot in a generally grim picture: Structural steel builders will be called on for repair materials for toppled or damaged bridges and other construction; contractors will have their hands full in highway, commercial building, and housing reclamation.

• **Toll in Roads, Bridges**—In Ohio, 14 bridges were damaged or swept away. Damage to roadbeds and bridges was estimated at $7 million. At Freeport, Pa., a barge smashed against a bridge over the Allegheny River, carrying away one span. In South Buffalo, N. Y., rushing water and ice rammed a freighter against a bridge, causing about $5 million damage. Hundreds of roads were closed to traffic in the three states; many will need repairs.

• **Plants Damaged** — Sharon, Pa., probably the hardest-hit single city, suffered its worst flood in history. Sharon Steel Co., deluged in a matter of minutes by the rampaging Shenango River, was working last week to bulldoze 2 to 4 in. of ice from the plant area. Some 4000 production workers were idled at Sharon Steel; damage estimates in the Shenango Valley ranged from $3 million to $6 million.

The flooding Kokosing River halted industry in Mt. Vernon, Ohio, and left thousands evacuated. Estimated loss: $2.5 million. Flood waters rose to 4½ ft in Cooper-Bessemer Corp.'s centrifugal compressor plant, damaging several large electric motors. But the firm resumed most operations last week.

Republic Steel Corp. was hit by flood waters at five separate plants. Production was halted in the Buffalo, N. Y., and Warren, Ohio, works. Work was stalled temporarily in the Youngstown plant, as well as in the steel plant and Berger Div. shops in Canton, Ohio. Early last week, six open hearth furnaces were relighted at the Buffalo Works.

• **Dents in Production**—Production was stifled at a number of steelmaking plants when water intakes became clogged with debris. High water also knocked out locks on the Monongahela River waterway, blocking traffic.

Jones & Laughlin Steel Corp. closed its mines at California, Pa., when coal shipments downriver to Pittsburgh and Aliquippa, Pa., were stopped. At Aliquippa, 47 barges broke loose from company docks, but most were recovered.

Allegheny Ludlum Steel Corp.'s largest steelmaking plant at Brackenridge, Pa., was idled by clogged water intakes. Open hearth furnaces were banked for 20 hours, after which operations returned to normal.

More than 6000 workers took an enforced rest for two days when intake water at the Midland, Pa., steel plant of Crucible Steel Co. of America, became scarce. The trickle available was routed to critical areas.

Steelmakers who encountered only transportation tie-ups, but reported negligible property damage or none included Timken Roller Bearing Co., Youngstown Sheet & Tube Co., and Wheeling Steel Corp.

Will Build Three Plants

Continental Can Co., New York, plans to build plants early this year at Pascagoula, Miss., and Weslaco, Tex. Lithographed and lacquered tin plate will be shipped to these points from Continental's plants at Birmingham, Houston, and Harvey, La. The firms's Canadian subsidiary will build a metal can plant at Chatham, Ont.

Chicago Port Expects 500% Export Gain from This Area . . .

It Looks for These Shipments

(General cargo exports through Chicago, in tons)

	1956	1960*	1965*	% Change 1956-65
Processed foods & animal products	73,277	273,643	307,992	+ 320
Textile, apparel, leather, printing & paper products	243	10,471	11,446	+4,610
Chemical, coal, petroleum, rubber & plastic products	7,830	35,529	42,191	+ 439
Primary & fabricated metal products	31,085	83,239	147,483	+ 374
Machinery, transportation equipment & instruments	9,557	70,084	99,551	+1,100
Wood, stone, clay, glass, & miscellaneous products	769	16,308	19,978	+2,498
Totals	122,761	489,274	628,641	+ 411

*Estimated by Chicago Association of Commerce & Industry.

BIDDING HARD to become one of the country's greatest shipping ports, Chicago unwrapped a new sales tool last week: A survey projecting a 411 per cent increase in exports from Chicago by 1965.

Checking 2700 exporting firms, the Chicago Association of Commerce & Industry reports that, in 1956, 2.5 million tons of general cargo and 11 million tons of bulk cargo originated in the area shown on the map. However, only 5 per cent of the general cargo and 3.5 per cent of the bulk moved through Chicago.

Armed with the survey, the association will be knocking on business, government, and banking doors to: 1. Secure better commodity rates. 2. Expand and improve port facilities. 3. Get shipping firms to increase their Chicago sailing schedules.

Chicago has another big sales tool—an international trade fair—coming up July 3 to 18 at Navy Pier. About 35 nations will exhibit more than 5000 products.

British Steelmakers Expect Slow Quarter

BRITISH STEEL output was 21.9 million tons in 1958, off 11.5 per cent from the 1957 pace (24.3 million tons). The industry is operating at 75 per cent of capacity. (Capacity is estimated at 27.4 million tons.)

Pig iron production was 14.6 million tons last year, down 11 per cent from the 1957 mark.

• **No Marked Upturn**—It is unlikely that there will be marked improvement in the iron and steel situation this quarter. With two exceptions, the auto and shipbuilding industries, steel demand is below normal. Stock reductions continue. Inventories are high.

Ian MacLeod, minister of labor, expects unemployment to peak in February.

• **Exports Up**—British industrialists were cheered by an increase in exports during November. Iron and steel shipments equaled 276,500 tons, up 67,000 tons from October.

Due to lack of demand for pig iron, imports have ceased, and exports come to about 14,000 tons per month. The decline in structural steel needs also has been sharp.

• **Auto Industry Bright** — Auto manufacturers had a record breaking year in 1958 (STEEL, Dec. 8, 1958, p. 79). They are doing a brisk trade with sheetmakers. Foundries are benefiting from the call for engine castings, but foundry unemployment is still high.

Continued modernization by railroads is encouraging. But buying of coal mining equipment is slack.

Shipbuilders are getting more steel than they have been able to at any time since the war because the pressure for supplies from other industries has eased. They're stocking up despite slow business.

26 Steelmakers Hike Capacity 6.9

Companies:	OPEN HEARTH No.	OPEN HEARTH Annual capacity (N. T.)	BESSEMER No.	BESSEMER Annual capacity (N. T.)	BASIC OXYGEN PROCESS No.	BASIC OXYGEN PROCESS Annual capacity (N. T.)	ELECTRIC AND CRUCIBLE No.	ELECTRIC AND CRUCIBLE Annual capacity (N. T)	Total annual capacity (N. T.)
‡Acme Steel Co.	..	.....	..	.....	2	451,760	..	.....	451,760
Acme-Newport Steel Co.	7	325,000	..	.....	..	.....	3	283,000	608,000
Totals	**7**	**325,000**	..	.....	**2**	**451,760**	**3**	**283,000**	**1,059,760**
Alan Wood Steel Co.	9	800,000	..	.....	..	.....	..	.....	800,000
‡Alco Products Inc.	3	105,850	..	.....	..	.....	1	2,800	108,650
Allegheny Ludlum Steel Corp.	5	312,000	..	.....	..	.....	30	552,200	864,200
American Compressed Steel Corp.	..	.....	..	.....	..	.....	1	21,600	21,600
‡Armco Steel Corp.	28	3,769,000	..	.....	..	.....	9	469,000	4,238,000
Sheffield Div.	12	1,344,000	..	.....	..	.....	5	768,000	2,112,000
National Supply Co.	..	.....	..	.....	..	.....	3	50,000	50,000
Totals	**40**	**5,113,000**	..	.....	..	.....	**17**	**1,287,000**	**6,400,000**
Atlantic Steel Co.	3	124,000	..	.....	..	.....	2	276,000	400,000
Babcock & Wilcox Co.	..	.....	..	.....	..	.....	4	229,450	229,450
Baldwin-Lima-Hamilton Corp.	5	169,920	..	.....	..	.....	2†	18,790	188,710
Barium Steel Corp: Phoenix Steel Corp.	11	806,760	..	.....	..	.....	1	40,000	846,760
Berkman Co., Louis: Ohio River Steel Div.	4	136,080	..	.....	..	.....	..	.....	136,080
Bethlehem Steel Corp.:									
Bethlehem Steel Co.	132	21,434,000	3	336,000	..	.....	6	230,000	22,000,000
Bethlehem Pacific Coast Steel Corp.	5	276,000	..	.....	..	.....	5	724,000	1,000,000
Totals	**137**	**21,710,000**	**3**	**336,000**	..	.....	**11**	**954,000**	**23,000,000**
Borg-Warner Corp.: Ingersoll Steel Div.	..	.....	..	.....	..	.....	4	64,000	64,000
Braeburn Alloy Steel Corp.	..	.....	..	.....	..	.....	2	20,730	20,730
Byers Co., A. M.	..	.....	..	.....	..	.....	2	90,000	90,000
‡Cabot Shops Inc.	..	.....	..	.....	..	.....	1	16,200	16,200
Cameron Iron Works Inc.	..	.....	..	.....	..	.....	2	58,800	58,800
Carpenter Steel Co.	..	.....	..	.....	..	.....	7	87,500	87,500
Carpenter Steel of New England Inc.	..	.....	..	.....	..	.....	2	84,000	84,000
Totals	..	.....	..	.....	..	.....	**9**	**171,500**	**171,500**
Colorado Fuel & Iron Corp.	27	2,601,500	..	.....	..	.....	..	.....	2,601,500
Roebling's Sons Corp., J. A.	9	235,000	..	.....	..	.....	..	.....	235,000
Totals	**36**	**2,836,500**	..	.....	..	.....	..	.....	**2,836,500**
Columbia Tool Steel Co.	..	.....	..	.....	..	.....	2	6,600	6,600
Continental Steel Corp.	5	420,000	..	.....	..	.....	..	.....	420,000
Copperweld Steel Co.	..	.....	..	.....	..	.....	7	660,000	660,000
‡Crucible Steel Co. of America	9	1,044,000	..	.....	..	.....	25	387,180	1,431,180
Detroit Steel Corp.	15	1,500,000	..	.....	..	.....	..	.....	1,500,000
Eastern Stainless Steel Corp.	..	.....	..	.....	..	.....	5	80,000	80,000
Edgewater Steel Co.	2	117,600	..	.....	..	.....	..	.....	117,600
‡Erie Forge & Steel Corp.	5	234,000	..	.....	..	.....	1	50,000	284,000
Finkl & Sons Co., A.	..	.....	..	.....	..	.....	2	33,600	33,600
Firth Sterling Inc.	..	.....	..	.....	..	.....	3	20,040	20,040
‡Florida Steel Corp.	..	.....	..	.....	..	.....	1	43,000	43,000
Ford Motor Co.	10	1,677,150	..	.....	..	.....	5	221,450	1,898,600
‡Granite City Steel Co.	7	1,440,000	..	.....	..	.....	..	.....	1,440,000
Harrisburg Steel Co. division Harsco Corp.	3	100,750	..	.....	..	.....	..	.....	100,750
Heppenstall Co.	2	50,470	..	.....	..	.....	1	5,080	55,550
Midvale-Heppenstall Co.	3	100,800	..	.....	..	.....	5	56,900	157,700
Totals	**5**	**151,270**	..	.....	..	.....	**6**	**61,980**	**213,250**
Industrial Forge & Steel Inc.	2	84,000	..	.....	..	.....	..	.....	84,000
‡Inland Steel Co.	43	6,500,000	..	.....	..	.....	..	.....	6,500,000
International Harvester Co.	11	1,200,000	..	.....	..	.....	..	.....	1,200,000
Isaacson Iron Works	..	.....	..	.....	..	.....	2	102,000	102,000
‡Jessop Steel Co.	..	.....	..	.....	..	.....	4	35,800	35,800
Green River Steel Corp.	..	.....	..	.....	..	.....	2	183,190	183,190
Totals	..	.....	..	.....	..	.....	**6**	**218,990**	**218,990**
‡Jones & Laughlin Steel Corp.	37	6,138,000	3	384,000	2	756,000	9	722,000	8,000,000
Joslyn Mfg. & Supply Co.	..	.....	..	.....	..	.....	3	37,500	37,500
Judson Steel Corp.	3	76,500	..	.....	..	.....	..	.....	76,500
‡Kaiser Steel Corp.	9	1,493,000	..	.....	3	1,440,000	..	.....	2,933,000
‡Keystone Steel & Wire Co.	4	475,000	..	.....	..	.....	..	.....	475,000
Kilby Steel Co.	..	.....	..	.....	..	.....	1	34,020	34,020

Million Tons

Basic oxygen process accounts for over 40 per cent of industry's 1958 increase, American Iron & Steel Institute's tabulation shows. Bessemer continues decline

Companies:	OPEN HEARTH No.	OPEN HEARTH Annual capacity (N. T.)	BESSEMER No.	BESSEMER Annual capacity (N. T.)	BASIC OXYGEN PROCESS No.	BASIC OXYGEN PROCESS Annual capacity (N. T.)	ELECTRIC AND CRUCIBLE No.	ELECTRIC AND CRUCIBLE Annual capacity (N. T.)	Total annual capacity (N. T.)
Knoxville Iron Co.	..	.....	..	.....	..	.....	2	38,000	38,000
Laclede Steel Co.	4	600,000	..	.....	..	.....	..	.....	600,000
Latrobe Steel Co.	..	.....	..	.....	..	.....	5	24,000	24,000
Le Tourneau Inc., R. G.	..	.....	..	.....	..	.....	3	90,000	90,000
‡Lone Star Steel Co.	5	800,000	..	.....	..	.....	..	.....	800,000
‡Lukens Steel Co.	12	750,000	..	.....	..	.....	1	180,000	930,000
‡McLouth Steel Corp.	..	.....	..	.....	5	1,385,400	4	654,600	2,040,000
Merritt-Chapman & Scott Corp.:									
Milton Steel Div.	..	.....	..	.....	..	.....	3	90,000	90,000
Mesta Machine Co.	8	151,000	..	.....	..	.....	1	20,000	171,000
Mississippi Steel Corp.	..	.....	..	.....	..	.....	1	45,000	45,000
National Forge & Ordnance Co.	..	.....	..	.....	..	.....	3	25,000	25,000
‡National Steel Corp.:									
‡Great Lakes Steel Corp.	17	3,700,000	2*	.....	..	.....	..	.....	3,700,000
Weirton Steel Co. Div.	14	3,300,000	2*	.....	..	.....	..	.....	3,300,000
Totals	**31**	**7,000,000**	**4***	.....	..	.....	..	.....	**7,000,000**
Newport News Shipbuilding & Dry Dock Co.	..	.....	..	.....	..	.....	3	15,000	15,000
Northwest Steel Rolling Mills Inc.	..	.....	..	.....	..	.....	2	53,000	53,000
Northwestern Steel & Wire Co.	..	.....	..	.....	..	.....	5	825,000	825,000
Oregon Steel Mills	..	.....	..	.....	..	.....	3	150,000	150,000
Pacific States Steel Corp.	3	216,000	..	.....	..	.....	..	.....	216,000
‡Pencoyd Steel & Forge Corp.	..	.....	..	.....	..	.....	1	15,600	15,600
‡Pittsburgh Steel Co.	12	1,560,000	..	.....	..	.....	..	.....	1,560,000
‡Porter Company Inc., H. K.:									
‡Connors Steel Div.	..	.....	..	.....	..	.....	4	225,000	225,000
Vulcan Kidd Steel Div.	..	.....	..	.....	..	.....	2	9,600	9,600
Totals	..	.....	..	.....	..	.....	**6**	**234,600**	**234,600**
‡Republic Steel Corp.	80	9,794,000	2	529,000	..	.....	23	2,419,000	12,742,000
Roanoke Electric Steel Corp.	..	.....	..	.....	..	.....	1	25,000	25,000
Sharon Steel Corp.	16	1,698,000	..	.....	..	.....	3	163,000	1,861,000
Simonds Saw & Steel Co.	..	.....	..	.....	..	.....	3	21,600	21,600
Southern Electric Steel Co.	..	.....	..	.....	..	.....	2	66,000	66,000
Southwest Steel Rolling Mills	..	.....	..	.....	..	.....	1	45,000	45,000
Texas Steel Co.	..	.....	..	.....	..	.....	4	132,450	132,450
Timken Roller Bearing Co.	..	.....	..	.....	..	.....	9	700,000	700,000
Union Electric Steel Corp.	..	.....	..	.....	..	.....	2	25,000	25,000
‡United States Steel Corp.:									
‡United States Steel Corp. (Central Operations)	177	27,657,000	8§	864,000	..	.....	10	462,000	28,983,000
American Steel & Wire Div.	22	1,988,000	..	.....	..	.....	..	.....	1,988,000
Columbia-Geneva Steel Div.	19	2,908,000	..	.....	..	.....	..	.....	2,908,000
National Tube Div.	15	3,146,000	6	894,000	..	.....	..	.....	4,040,000
Tennessee Coal & Iron Div.	23	3,997,000	3†	.....	..	.....	..	.....	3,997,000
Totals	**256**	**39,696,000**	**17**	**1,758,000**	..	.....	**10**	**462,000**	**41,916,000**
‡Universal-Cyclops Steel Corp.	..	.....	..	.....	..	.....	10	77,410	77,410
Empire-Reeves Steel Corp.	7	500,000	..	.....	..	.....	..	.....	500,000
Totals	**7**	**500,000**	..	.....	..	.....	**10**	**77,410**	**577,410**
Vanadium-Alloys Steel Co.	..	.....	..	.....	..	.....	4	12,000	12,000
Colonial Steel Co.	..	.....	..	.....	..	.....	2	30,000	30,000
Totals	..	.....	..	.....	..	.....	**6**	**42,000**	**42,000**
Washburn Wire Co.	4	93,000	..	.....	..	.....	..	.....	93,000
‡Western Rolling Mills Div. Yuba Consolidated Industries Inc.	..	.....	..	.....	..	.....	2	60,000	60,000
Wheeling Steel Corp.	11	1,830,000	2	570,000	..	.....	..	.....	2,400,000
‡Wickwire Bros. Inc.	..	.....	..	.....	..	.....	2	32,440	32,440
‡Youngstown Sheet & Tube Co.	41	6,750,000	..	.....	..	.....	..	.....	6,750,000
Grand Totals	**920**	**126,528,380**	**31**	**3,577,000**	**12**	**4,033,160**	**291**	**13,495,130**	**147,633,670**

* Bessemer converters used in melting charge for open hearth furnaces.

† Includes one crucible furnace, annual capacity, 40 tons.

§ Includes three bessemer converters used only in melting charge for open hearth furnaces.

‡ New or increased capacity for 1959.

• *An extra copy of this article is available until supply is exhausted. Write Editorial Service,* STEEL, *Penton Bldg., Cleveland 13, Ohio.*

Merger Rate Still High

SELECTED INDUSTRIES	1958	1957	1956
Primary metals	22	31	23
Fabricated metal products	34	46	27
Machinery (except electrical)	59	57	79
Electrical machinery	40	40	39
Transportation equipment	38	25	46
Instrument	21	16	14
Chemical	41	35	53
Petroleum & coal	9	4	13
Rubber	4	6	5
Stone, clay & glass	16	22	13
Totals	284	282	312

Source: Federal Trade Commission.

The Big Merger Is Off

THE MOST monumental marriage in metalworking won't materialize. Bethlehem Steel Corp. and Youngstown Sheet & Tube Co. last week broke off their engagement to merge. They decided not to ask Uncle Sam's blessings in the Supreme Court after they were refused in the lower court.

• **Looking Ahead**—Both said they will be better off. Two reasons for the decision: "To avoid continued uncertainty . . . and to permit individual planning."

If they had appealed Judge Edward Weinfeld's decision which barred the merger last November, a final ruling probably wouldn't have come until 1960. In today's competitive market, observes one industry source, no steel company can afford to hold back its long range planning for two years.

A. B. Homer, Bethlehem's president, indicated his firm still plans to enter the midwestern steel market: "Bethlehem has already proceeded with studies to determine the best way in which it can now expand its service to that market, particularly engineering studies as to the use of Bethlehem's northern Indiana property."

It is said that Bethlehem planned to use 4000 acres near Gary (with a Lake Michigan shoreline) for finishing facilities to handle Youngstown ingots made at Chicago.

• **Untimely?**—While Bethlehem's lawyers are not commenting, the feeling among observers close to the Justice Department is that the merger didn't stand a chance. The Supreme Court doesn't seem to favor the concentration of U. S. industry in fewer hands, no matter what the resulting competitive conditions would be.

The decision to call the marriage off will discourage some firms in heavy industry that would like to merge to stabilize their financial position or increase the size of their markets. Nevertheless, Sharon Steel Corp. and Pittsburgh Steel Co. are considering such a move (see Page 77).

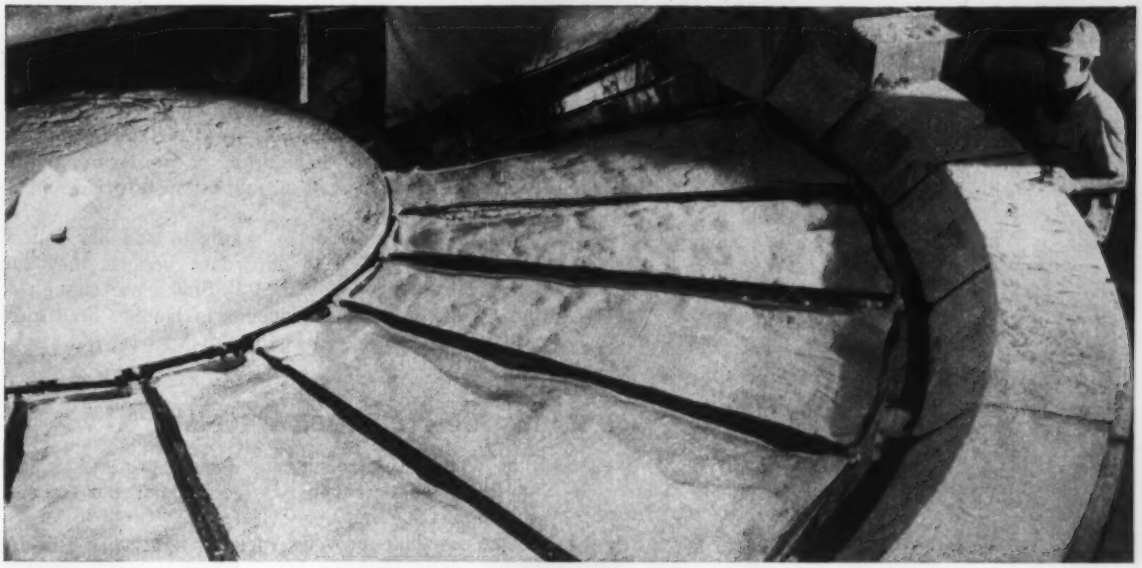
• **The Railroad Picture**—On Capitol Hill, feeling against the steel merger has run high. You can expect some Congressional pressure against another heavy industry which wishes to stabilize its operations—the railroads.

But Sen. George Smathers (D., Fla.), a rail enthusiast who heads the Surface Transportation Subcommittee, said last week: "We must encourage railroad mergers and consolidations. Hundreds of competing railroads, using outmoded practices and with pointless duplications, can no longer meet the challenge of the times."

Termination of discussions between the Pennsylvania and the New York Central may have resulted from legal advice that the Justice Department would oppose such a merger, it is reported in Washington. Mergers between smaller roads may be another matter.

• **The Trend** — FTC figures on mergers in 1958 give little indication of a downtrend. There were 899 last year, compared with 941 in 1957. Significantly, industries which did the least merging were those hardest hit by the recession: Textiles, machinery (except electrical), and transportation equipment. The trend continued on the up side in an industry hardly touched by depressed business conditions: Professional and scientific instruments.

It is possible, notes an FTC source, that mergers have reached the saturation point in certain industries. Other industries may reach that point soon. But the trend will continue to develop in another direction: Partial mergers. An example is the acquisition of a firm's distribution setup but not its manufacturing facilities. While FTC has no firm figures to offer on the partial merger trend, it reports significant gains over the last few years.



Rotary pan filter at Ormet Corp.'s alumina plant, Burnside, La., is checked. After 30 to 40 hour precipitation period, coarse particles of aluminum trihydrate are fed in a slurry filter (above) where they are washed and filtered. They emerge as wet crystals. Hydrate is then converted to its stable form, alumina, by extreme temperature

From Bauxite to Ingot at Ormet Corp.

ORMET CORP., the nation's fourth largest aluminum producer, completed its integration last month by putting its $55 million alumina plant at Burnside, La., into production. The company is owned by Olin Mathieson Chemical Corp. and Revere Copper & Brass Inc.

Its chain of integration extends from the tropical coastline of Surinam (formerly Dutch Guiana) where brick red bauxite is mined, to the rolling hills of southeastern Ohio where ingots are cast.

• **Latest Addition**—The Burnside plant is 30 miles south of Baton Rouge on the Mississippi River. Its capacity is listed at 345,000 tons yearly, but engineers say the figure may come closer to 360,000 tons. Designed to handle 700,000 tons of bauxite annually, it will supply the alumina requirements of the company's 180,000-ton-a-year primary reduction works at Hannibal, Ohio.

Adjacent to the alumina plant is the spanking new Burnside Bulk Marine Terminal where carriers from Surinam unload their bauxite cargo at Ormet's door. Bauxite is transferred from the ship by six enclosed conveyors (capacity, up to 2000 tons of ore per hour). The alumina cycle follows: Digestion, filtration, precipitation, and calcination. The end product, aluminum oxide (alumina), is conveyed (rate, up to 1500 tons per hour) to the dock where it is shipped up the Mississippi and Ohio Rivers by barge to the Hannibal reduction plant.

• **Ore Port**—The Burnside terminal is 170 miles north of the Mississippi's mouth, close to the navigational limit for ocean-going vessels. Its annual rated capacity of over 4 million tons makes it the largest facility for handling bulk cargo in the Gulf Coast area. Olin Mathieson leases the terminal from the Baton Rouge Port Authority on a long term basis for operation as a public port.

The Port Authority predicts enough bauxite, phosphate, chrome, manganese, and iron ore will be handled within the next 12 months to make Baton Rouge one of the six largest deep water ore handling ports in the U. S.

• **Costs Less**—The obvious selling point is cost. Ocean-going vessels of up to 40,000 tons can ply 130 river miles north of New Orleans. Cargoes are unloaded at the rate of 4800 tons an hour into barges for shipment upriver into America's industrial heartland.

It is hoped the terminal will encourage other companies to build plants on nearby river sites. Says Ormet's president, N. Harvey Collisson: "The terminal permits manufacturers to bring in their raw materials economically by water, have them transferred to their adjacent plants, then ship out the packaged products in bulk by water, rail, or truck."

• **Integrated**—Here's how Ormet's $385 million complex operates. Bauxite, purchased in Surinam under a contract that extends through 1965, will be shipped to Burnside in three Ormet ore vessels (capacity, 14,000 tons each). Alumina is freighted upriver in a fleet of 36 barges to the Hannibal reduction plant. Ormet's function ceases when the pig is cast. All production is taken by the parent companies: 120,000 tons goes next door to the Olin Mathieson mill at Omal, Ohio; 60,000 tons go to Revere fabricating plants in Baltimore and Chicago.

Who's Right About Defense?

SECRETARY Neil McElroy spent a good part of his most recent press conference dodging embarrassing questions about the defense budget. He was reminded, for example, that last year he had discussed the "inevitability" of an annual $1 billion increase in our defense spending for several years to come. Yet, fiscal 1960's budget is only $150 million above fiscal 1959's. The secretary's answer: Changes in strategic concepts and advances in technology have made the $1 billion increase not so inevitable.

When pressed, Mr. McElroy cited the cancellation of the Goose decoy missile as a change in strategic concepts. Originally, the subsonic bird was to fly ahead of our bomber force to trick the enemy, making it waste its defensive firepower. Today, noted Mr. McElroy, a large percentage of our Strategic Air Command bombers are in the air at all times. If an alert comes, the subsonic Goose would be fired several minutes after the jets had confirmed their orders to attack. The missile wouldn't be fast enough to carry out its mission.

Question: Is that really a strategic concept change?

Polaris Speedup Is Definite

For the first time, the secretary revealed the confidence he has in the Navy's Polaris program. Commenting on the cancellation of the Regulus II, he reported its delivery time would have overlapped delivery of the first Polaris subs and missiles, so it is not needed. He admitted that continuation of the Regulus would have resulted in Uncle Sam having a bigger stockpile of missiles: But "quantity" isn't the administration's objective. "More bang for the buck" still holds sway. Though we may have fewer missiles than an enemy, we will have enough "of such destructive power that their deterrent effect would discourage a general war," he said. The extent of that discouragement seems to be big enough today. What some congressmen worry about is the possibility of a missile lead the Russians could have in a few years.

By then, contends Sen. Stuart Symington (D., Mo.), the Russians may outnumber us to the extent that our deterrent force will have little or no meaning. He claims the Russians will outnumber us 4 to 1 in operational ICBMs by 1961.

Mr. McElroy, of course, wants to add our Polaris missiles and IRBMs to our count because they can be as effective as an ICBM if fired close enough to the USSR. Rapid developments in bomber fired birds will also tend to close the gap.

Missile Production Forecast

So who is right about our defense posture? It is a matter of what weapons you count and your estimate of how effective they may be.

The squabble provides metalworking with this information: If Senator Symington's forecast is correct and unofficial reports that we plan to build 200 ICBMs of the Atlas-Titan class can be believed, Secretary McElroy's confidence in our defense posture is indicated by our plans to build a force of 12 Polaris firing subs through the '61 fiscal budget. Our 200 ICBMs, our 100 or so IRBMs in Europe, and the 144 Polaris missiles required to arm the subs would cut Russia's numerical superiority from 4 to 1 to 2 to 1—enough to deter an enemy, when our bomber fleet is thrown in.

Increased procurement for missiles ($3.8 billion in fiscal '60) won't be pronounced until the operational date of the Minuteman. That's the Air Force's solid-fueled ICBM, with a current operational target of 1962-63. If Russians can build 800 ICBMs by 1961, assuming they have none operational now (which is what Mr. McElroy says), then they can build over 250 a year. Without building additional obsolete Atlas and Titan birds after 1961, we must be planning to pour hundreds of millions of dollars into the Minuteman to keep a healthy deterrent force. (The Air Force has probably won its argument that 12 Minuteman missiles are cheaper to build than the one sub needed to fire 12 Polaris missiles.) You can expect missile spending to double by fiscal 1964.

What Congress Wants

Congress, of course, doesn't have to abide by the Pentagon's long range plans, so you'll probably see Senator Symington's point of view win to this extent: Additional appropriations for three more Polaris subs (about $300 million), another $100 million to bring the Minuteman's operational date maybe a year closer, and perhaps another $100 million for the more advanced birds like Bold Orion and Eagle. The tendencies to appropriate funds for birds in the production stage will be countered by Pentagon arguments that by 1961 we'll have much better weapons on hand, so why waste more money on obsolete types?

The Pentagon can be expected to hold its spending to the established ceiling—as it did last year. Additional funds will go into fiscal 1961's spending.

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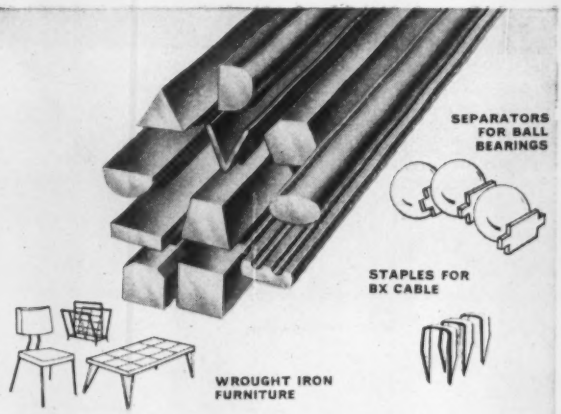

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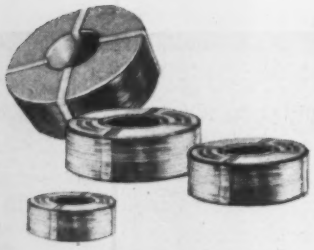

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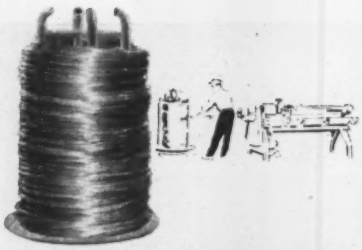

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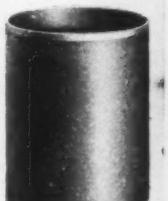

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How Whiting Figures Sales Call Costs

SALES OFFICE	CALLS IN ONE YEAR
Charlotte, N. C.	684
Chicago	3379
Cincinnati	890
Detroit	1305
Houston	848
N. Y.-Dom. & Exp.	2764
Norwalk, Calif.	1026
Philadelphia	1504
Pittsburgh	1863
St. Louis	1437
Seattle	825
Total	16,525

Total sales (All offices for 12 months in millions)	$17,169
Dollar sales per call	$ 1,039
Office expense (All offices for 12 months)	$891,630
Cost per call	$ 53.96
Calls per man per day	1.42
Selling cost per sales dollar	5.2%

Do You Get Your Money's Worth on Sales Calls?

WHITING CORP., Harvey, Ill., has found it costs $50 to $60 for each call its salesmen make on prospective customers. At that rate, salesmen should be tops; industrial selling cannot afford less, says G. E. Seavoy, vice president.

• **Calls Mean Business** — "Calls bring inquiries and inquiries bring orders. The real selling job is done while talking to the customer at his factory or office," states Mr. Seavoy.

"There is a relationship between the number of such calls and the volume of business obtained," he continues. "We became interested in knowing the facts about our sales costs several years ago and made a study of our industrial (nonprice list equipment) selling expenses."

A five year analysis revealed: 1. Weighted cost per call equaled $52.84. 2. Calls per manday were fairly constant, varying between 1.33 and 1.42. 3. Weighted average selling cost was 4.86 per cent of every sales dollar.

• **Data Needed** — To figure your cost per sales call, you need this basic information: 1. Daily or weekly call reports, segregating all field selling expenses by cost accounting. 2. Separate accounting of salaries, travel, rent, telephone, telegraph, and other expenses for each district office. Costs can be broken down by office and product line.

The table (above) presents a summary of Whiting Corp. call reports for fiscal 1957-58. Total business per call is calculated by dividing total calls into total sales. Total office expense divided by total calls yields cost per call. Divide sales per call into cost per call for the field selling cost per sales dollar. Based on a five day week, 50 weeks per year, 11,655 mandays of work equal 1.42 calls per manday.

• **What Is a Call?**—A visit to a customer is a call no matter how many personnel are involved. If the interview concerns more than one type of equipment, each class of equipment is credited with a fraction of the call. But it still is only one call since only one buying company is involved. Telephone calls are excluded. They are classified under selling overhead.

Mr. Seavoy concludes: "This study is not professed to be scientifically correct, but it does shed light on an important part of selling expense."

Inland Buys Product Line

Inland Steel Products Co., a subsidiary of Inland Steel Co., Chicago, will take over the Metal Building Div. of Steelcraft Mfg. Co., Cincinnati, today (Feb. 2). Steelcraft sold the tools and machinery of its Metal Building Div. to Inland and leased more than 125,000 sq ft of space in its plant to the buyer.

At Cleveland Works Division of the Exciting New J&L...

Wean lines give "finishing touch"

Wean 80" and 56" Continuous Strip Pickling Lines.

Quick facts on Wean processing equipment at J&L, Cleveland:

- **80" Continuous Pickling Line:** max. exit coil wt.—60,000#; strip thickness—.060" to .188"; line speeds—1000 FPM (entry end), 375 FPM (tanks and exit end).
- **56" Continuous Pickling Line:** max. exit coil wt.—50,000#; strip thickness—.060" to .250"; line speeds—1200 FPM (entry end), 500 FPM (tanks and exit end).
- **54" Cold Rolled Shear Line:** max. coil wt.—60,000#; strip thickness—.025" to .060"; sheet lengths—30" to 180"; line speed—800 FPM.
- **80" Cold Rolled Shear Line:** max. coil wt.—60,000#; strip width—24" to 72"; strip thickness—.012" to .0937"; sheet lengths—30" to 192"; line speed—300 FPM.
- **80" Hot Rolled Up-Cut Shear Line:** max. coil wt.—30,000#; strip width—24" to 75"; strip thickness—.375"; sheet lengths—48" to 500"; line speed—140 FPM.
- **80" Hot Rolled Flying Shear Line:** max. coil wt.—30,000#; strip width—18" to 75", thickness—.048" to .250"; sheet lengths—24" to 288"; line speed—350 FPM.

to high-quality J&L Steel

At these Jones & Laughlin facilities, Wean processing equipment plays an important role in the production of highest quality strip and sheet.

The 56″ and 80″ Wean continuous pickling lines efficiently remove scale from the strip prior to cold reduction. Four Wean shearing lines provide versatile combinations of shearing, recoiling, slitting, edge trimming and temper passing to produce sheet in a wide range of sizes and in thicknesses from .012″ to .375″ to suit every customer requirement.

The dependable, economical performance of these Wean installations typifies the advantages you can expect from Wean *creative engineering*—whatever your requirements for continuous steel processing lines.

Wean 80″ Cold Rolled Strip Shear Line.

Wean 54″ Cold Rolled Strip Shear Line.

Two Wean 80″ Hot Rolled Strip Shearing Lines with McKay Processing Uncoilers.

Exit End—Wean 80″ Hot Rolled Shearing Lines (Flying Shear—left; Up-Cut Shear—right).

Specialists in the design and construction of sheet, strip and tin plate processing lines . . .

THE WEAN ENGINEERING COMPANY, INC. • WARREN, OHIO

Supplemental Compensation:

Three Stages of Managers . . . What's Important

YOUNGER MANAGER ON THE WAY UP

Takehome dollars for the necessities

MIDDLE-AGED MANAGER WITH HEAVY FAMILY RESPONSIBILITIES

"Family-protective" forms of insurance

OLDER MANAGER WITH ADEQUATE LIVING INCOME

Retirement plans, deferred pay, capital gains opportunities

How To Set Managers' Pay Fringes

SALARIES PLUS supplemental compensation are the most valuable tools a company has to attract, retain, and motivate good employees.

The market (STEEL, Jan. 19, p. 42) sets minimum salary levels. That's why supplemental compensation has big role in creating a more attractive compensation package.

• **Salary Plus What?** — Supplemental compensation can take many forms and approaches (see exhibit), and each can be tailored to do a job. But how they are combined into a package can spell the difference between an effective, dynamic salary program or one that has tax avoidance as its chief goal.

The meaning of income varies with the individual:

If we're neophyte managers, takehome dollars are our chief concern.

As middle-aged managers with family obligations, we want insurance against unemployment, sickness and disability, death.

As older managers, our interest shifts to retirement programs, deferred compensation, capital gains opportunities.

• **Salary Purposes**—The important thing, salary administrators point out, is to first map out company objectives in compensation. The objectives of the individual manager should be taken into account.

There are two ways to look at salaries: 1. As a reward for services rendered. 2. As an incentive to future performance.

The cash incentive is probably the most effective inducement to improve performance, but it's the most controversial form of supplemental compensation because its application is problematical.

Measurement of performance is the chief obstacle once you get away from the sales and production areas, which have quantitative measurement factors. Opponents of the cash incentive ask: How can you measure the contribution of the accountant, or industrial relations man?

• **Case Histories** — Lincoln Electric Co.'s bonus plan is famous. Some label it "carrot dangling"; others call it the purest form of incentive. Here are its basic elements: Twice a year employees are merit rated on supervision required, contribution to improvement, output, workmanship, and attitude toward quality. The individual competes within his group.

Most of the personnel receive a yearend bonus ranging from 90 to 110 per cent of their annual pay. In 1958 the company distributed $5.1 million to 1380 employees. The top 25 managers of the company receive bonuses determined by the president and chairman. Their percentage is generally higher than that of the merit rated group.

• **Defining the Group** — Stewart-Warner Corp. has a plan favored

Tailor It to the Individual

TYPE	FAVORABLE TAX TREATMENT							
	Deductible for Company	Deferred for Individual	Taxfree Earnings	Capital Gains	Minimum for Estate Benefit	Protection Against Hazards	Incentives Performance	Inducement To Remain
Deferred Bonus	When Paid	Yes	No	No	No	No	Yes	Yes
Life Insurance	When Contributed	Yes	No	No	No	Yes	No	No
Health Care	When Contributed	Yes	No	No	No	Yes	No	No
Pension	When Accrued	Yes	Yes	Yes if lump sum	No	Yes	No	Yes
Profit Sharing	When Accrued	Yes	Yes	Yes if lump sum	Yes	Limited	Yes	Limited
Savings Plan	When Accrued	Yes	Yes	Yes if lump sum	Yes	Limited	No	Limited
Stock Bonus	When Paid	Can be	Can be	Yes	Can be	No	Yes	No
Stock Purchase	....	No	No	Yes	No	No	Yes	No
Stock Option	When Paid	Yes	No	Yes	Yes	No	Yes	Limited

Source: Hewitt & Associates.

by many firms—that of providing bonus money to divisions. A formula is used to relate each division's contribution to corporate profits. Managers are grouped by function and organizational level. Each group is assigned a percentage share in the bonus pot, and individuals participate according to that ratio. A typical ratio involving three groups is 3:6:9—for each $3 that individuals in the lowest group receive, the middle get $6 and the top $9.

Instead of establishing groups by function and organizational level, some firms use salary levels as the determinant: $10,000 to $15,000, $15,000 to $23,000, $23,000 up.

Several profit sharing plans are popular—those that pay cash annually or oftener, deferred plans for retirement or separation, or combinations of the two. Most plans are of the deferred type. Employee participation is determined with formulas based on salary and tenure.

Advantages of profit sharing: Everybody shares proportionally; it's a good method to provide a retirement fund. Disadvantages: The individual's contribution is not recognized, and where funds are fully vested after ten years or so, the individual may lose some of his incentive to stay with the company.

• **Reward the Man**—One approach getting increasing attention is aimed at rewarding the individual. The employee and his superior develop mutually acceptable goals. Bonus earnings are based on the measurement of performance against goals. To insure that all goals are coordinated with company or division objectives, this approach must begin at the top, with the division head and his function managers.

There's also a growing conviction that the cash incentive plans logically should be restricted to the top decision makers in the company. Reasoning: The decisions of these executives really determine the direction of a company's profits.

Perquisites (privileges and services) are a final form of supplemental compensation not to be overlooked, says Robert P. Meiklejohn, vice president of General Dynamics Corp. Included are magazine subscriptions, use of company cars and airplanes, the size and location of the manager's office, even the thickness of the carpet on his floor.

• **Summary**—Base salaries, even if they're above average, won't accomplish all the compensation goals of a company, or of the individual manager. The various forms of supplemental compensation provide the tools to complete the compensation package. Its effectiveness depends upon the use of the tools.

• *This is the final installment of a three-part series on techniques for setting salaries of metalworking managers. The first article appeared Jan. 19; the second, Jan. 26. An extra copy of any in the series will be available until the supply is exhausted. Write to Editorial Service,* STEEL, *Penton Bldg., Cleveland 13, Ohio.*

ULTRA-MODERN TECHNOLOGY PLUS OLD-FASHIONED DEVOTION TO QUALITY IS THE SECRET OF HYATT SUPERIORITY

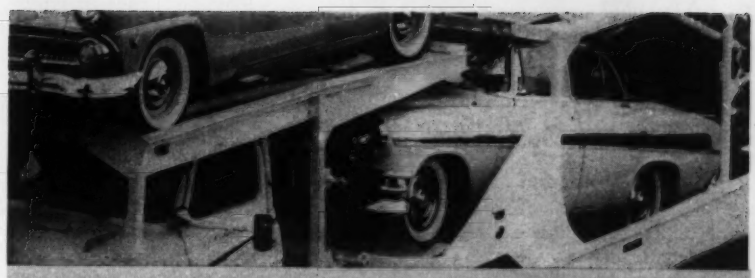
Other producers may boast equally elaborate electronic controls these days. But there is still no substitute for the tradition of craftsmanship which has made HYATT the most respected name in cylindrical bearings since 1892. *For maximum performance per bearing dollar, insist on . . .*

HYATT *HY-ROLL BEARINGS*
FOR MODERN INDUSTRY

HYATT BEARINGS DIVISION • GENERAL MOTORS CORPORATION • HARRISON, NEW JERSEY

Available through United Motors System and its Independent Bearing Distributors

NO BEARINGS carry radial loads like cylindrical bearings . . . and NOBODY builds them like HYATT



How New Model Sales Start

(In thousands)

First 5 Mo. Model Year	1959 Model	1958 Model	1957 Model
March	495	364	533
February	410	321	469
January	430	380	490
December	490	473	488
November	369	447	465

Figures represent monthly retail deliveries. 1959 figures are preliminary projections.

Early Sales Figures Presage Good Car Year

NEW CAR sales in the crucial first three months substantiate car-builders' claims that Detroit is headed for a 5.5 million to 5.8 million car year. Imports probably will shove sales over 6 million.

Dealer stocks are closely paralleling the 1956-57 rate. Inventories stood at 286,000 in November, and *Ward's Automotive Reports* figures they'll be pushing the 700,000 mark going into February. The word in motordom is that the industry wants to keep dealer inventories around 800,000 through June.

• **Hike Output**—Ford Div. has already hiked schedules 13 per cent. J. O. Wright, division general manager, says output will be 31 per cent higher than it was in February, 1958, when Ford built 95,700 cars.

Part of the Ford boost is due to the increasing popularity of its models. First run fad buyers rushed the "radically restyled" Chevrolets; now the more conservative purchasers are entering the market. Ford sales in the second ten days of January are 8 per cent ahead of the first ten days and 38 per cent ahead of the first ten day period in 1958. Daily sales are running around 4000. Chevy isn't releasing ten day figures, but the division reaffirms it outsold Ford by 25,000 units in December. Rumors have it that Chevy's daily sales rate in the first part of January has been running around 3200.

• **Imports Threatened** — Foreign cars like Volkswagen and Renault still offer a potent sales threat, but there are signs the rush is over for smaller importers. Domestic competition will cut farther into this market. Latest figures show imports dropped from 38,168 in October to 35,198 in November, 1958. Market penetration slipped from 11.8 to 10.5 per cent—the first loss in either category since December, 1957.

Chrysler Corp. has added three larger Simca models to its domestic stocks. The cars have 106 in. wheelbases instead of the 96 in. jobs announced last fall. Prices range from $1998 to $2298. Simca sales will help bolster imports. And Ford has announced it's scheduling 27,000 imports through June. In 1958, the company imported 39,000 English Fords.

• **AMC, S-P Gain**—The biggest threat to foreign producers are American Motors Corp.'s Ramblers and Studebaker-Packard Corp's Lark. In South Bend, Ind., Larks are being turned out at a consistent 3700 per week, compared with a rate of around 1200 per week during 1958's first quarter. Early January sales were 181 per cent ahead of the year ago level. For the last three months of 1958, S-P had a net profit of $3.7 million on $88.6 million car sales. It had a $1.5 million loss in the same quarter of 1957.

George Romney, AMC president, says January-March production calls for 100,000 Ramblers, compared with 41,183 in the same quarter last year. Ten day sales have been running as high as 166 per cent ahead of year ago rates. For its first fiscal quarter ended Dec. 31, AMC reports net sales of $193.7 million, against $118.6 million a year ago. Earnings were $21 million ($3.56 a share), versus $4.9

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million (89 cents a share).

• **Can Chrysler Do?**—While there's little doubt that at least 5.5 million customers are willing to buy, automakers are facing some irksome problems in getting steel and glass. Early last fall, Chrysler stocked up on glass in anticipation of the strike at Pittsburgh Plate Glass Co., but the company didn't count on a prolonged shutdown. Last week, Chrysler scheduled five days' output for Dodge trucks, three days for the Chrysler-De Soto plant in Detroit. Other assembly lines were closed down, so the company couldn't do better than 3000 units.

Chrysler managed to get a couple of sets of tooling out of a Pittsburgh Plate Glass shop last week, but now it's having trouble finding firms with enough capacity to push out all the glass it needs. It looks like the company will have to limp along until the glassworkers settle their difficulties. AMC and S-P also buy some glass from Pittsburgh Plate Glass, but they're not hurting as much. They've been able to get glass from Ford. Although one of Ford's glassmaking facilities was struck briefly, the company indicates it doesn't expect more trouble.

• **Need Steel, Too**—Suppliers are building up their supplies of steel. Mill reports indicate that Chrysler has joined Ford in "advising" venders to stock up on steel to last through November. Chrysler's flat-rolled inventories reportedly are between 25 and 30 days, but in March, the firm will be buying more steel to carry it into the 1960 model run.

GM's Fisher Body Div. says its plants are maintaining a two week to two and one-half week inventory of flat-rolled products but adds it will go into an accelerated buying program as production picks up. Fisher Body has no comment on whether steel purchases will be greater than production hikes warrant.

• **Rouge Outlook**—While Ford will start building steel stocks in the next six weeks, its Rouge steel plant (1.89 million tons annual capacity) is operated by members of the UAW's Local 600 instead of by United Steelworkers. If practice is followed, Ford's mill will still be operating even if all other mills in the country are on strike. So Ford should have all the steel it needs. The company says it keys mill production to car output.

Tool Shops Sign with UAW

Skilled workers in 80 Detroit area tool and die shops have ended a negotiation, deadlocked since June 20, by ratifying a three year contract (it expires Oct. 1, 1961).

The contract affects 7500 workers, members of UAW Locals 155 and 157. Total wage and fringe benefits equal 21 cents over the life of the contract. Included are 6 cents in hourly fringe benefits which become effective immediately. A 7 cent an hour wage hike goes into effect Sept. 1, 1959, and another 8 cent increase will be added Oct. 1, 1960.

Among the fringe benefits are improvements in pensions, hospitalization, and surgical plans, death benefit insurance, and sick and accident insurance programs.

Autodom's Political Slants

Corporations better make politics an essential part of their business if they want to stay in business, declares Thomas R. Reid, director of Ford Motor Co.'s civic affairs office. Mr. Reid adds: Instead of backing any one party, companies should express their opinions on public issues in which they have an interest.

Some of Mr. Reid's compatriots in autodom have been engaged in politics for years. Recently, they "expressed opinions" on several bits of proposed legislation that may affect their corporate futures.

George Romney, AMC's president, charges that President Eisenhower's economic report is not realistic in its appeal to labor leaders to exercise "self-discipline and restraint" in contract demands. He thinks unions today are as ruthless and powerful as industrial monopolies were in Theodore Roosevelt's era.

Among his proposals for curbing union power, Mr. Romney urges: Prohibition of combining national unions for the establishment of common bargaining demands or use of economic power.

A more subtle form of political expression is made by one of Mr. Reid's cohorts, Robert J. Eggert, Ford's marketing research manager. Mr. Eggert points out that taxes represent almost one-fourth the cost a consumer pays for the average low priced car. He adds that the biggest single item is the "present discriminatory excise tax of 10 per cent."

U. S. Auto Output

Passenger Only

	1958	1957
January	489,357	641,519
February	392,112	570,650
March	357,049	578,356
April	316,503	548,656
May	349,474	531,413
June	337,355	500,266
July	321,053	495,625
August	180,324	524,363
September	130,426	283,862
October	261,696	327,362
November	514,099	578,600
December	593,926	534,714
Totals	4,243,374	6,115,458

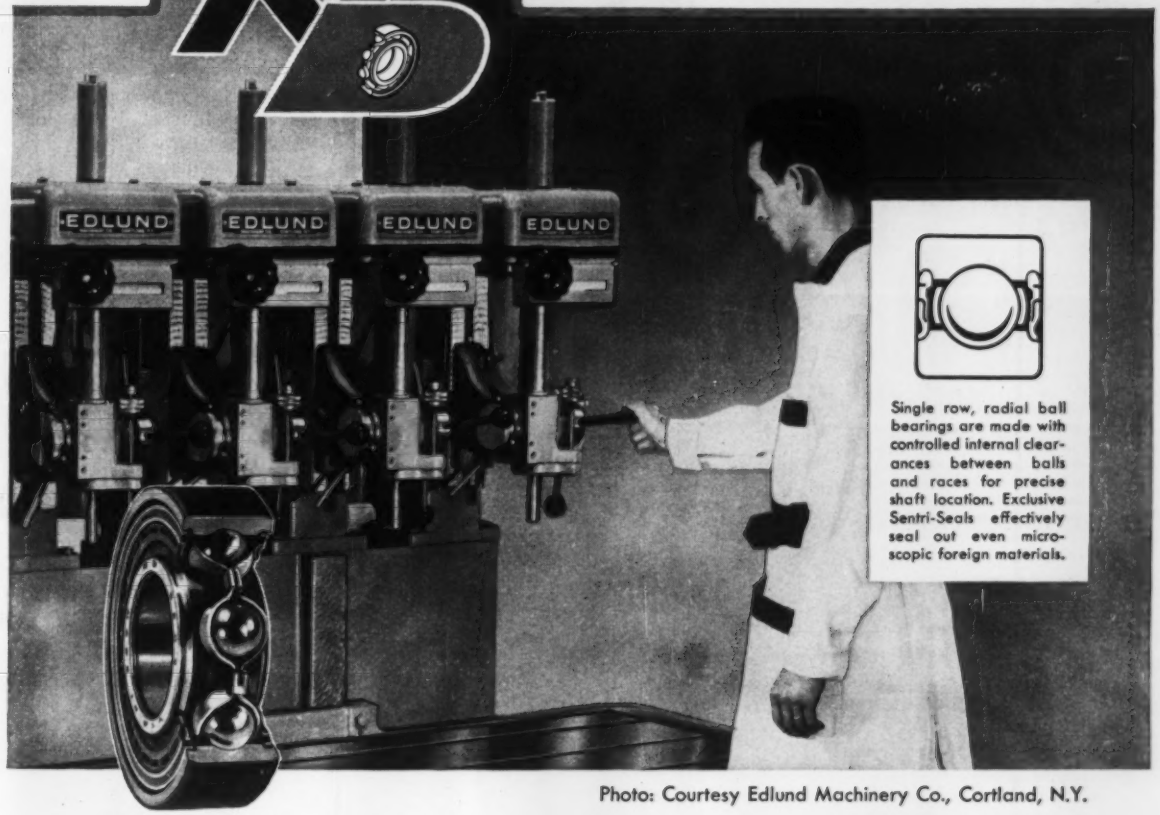
Week Ended	1958	1957
Dec. 27	104,907	79,945
	1959	**1958**
Jan. 3	97,664	76,653
Jan. 10	133,362	120,140
Jan. 17	135,953	109,761
Jan. 24	127,189†	107,495
Jan. 31	120,000*	104,359

Source: *Ward's Automotive Reports.* †Preliminary. *Estimated by STEEL.

Exhaust Notes

- Ford Motor Co.'s *Body Builder's Layout Book*, containing specifications and designs for 370 Ford truck models, can be obtained through Ford's Truck Marketing Dept., Dearborn, Mich. It has chassis dimensions and power takeoff applications useful to body builders and equipment manufacturers.
- Cadillac reports its Eldorado brougham is in limited production. Accessories like air conditioning, power seats and windows are standard. The car is listed at $13,075.
- Ford says fleet sales are 50 per cent ahead of last year's. Howard W. Cook, manager of Ford Div.'s fleet sales, says the division is taking two-thirds of the initial 5000 orders placed by fleet operators.

CASE HISTORIES



Single row, radial ball bearings are made with controlled internal clearances between balls and races for precise shaft location. Exclusive Sentri-Seals effectively seal out even microscopic foreign materials.

Photo: Courtesy Edlund Machinery Co., Cortland, N.Y.

Ball Bearing Design Adds Efficiency... Cuts Relube Maintenance In Drilling Machine

CUSTOMER PROBLEM:

Tool manufacturer requires minimum maintenance ball bearing design for new high-speed multiple drilling machine.

SOLUTION:

N/D Sales Engineer, cooperating with company engineers, recommended New Departure ball bearings with exclusive Sentri-Seals in place of conventional open bearings. These ball bearings, sealed and lubricated for life, virtually eliminated bearing relubrication maintenance. In addition, these sealed bearings accounted for a savings in parts and assembly time by eliminating costly lubrication plumbing and fittings. What's more, the application has proved so successful, the customer has had other types of drilling machines redesigned to use New Departures.

If you're working on new machine designs, why not call on New Departure? There's probably an N/D *production* ball bearing that will help you, and, at a lower cost! For more information write Department T-2.

Replacement ball bearings available through United Motors System and its Independent Bearing Distributors

NEW DEPARTURE

DIVISION OF GENERAL MOTORS, BRISTOL, CONN.

NOTHING ROLLS LIKE A BALL

Timken® steel puts muscle in missiles

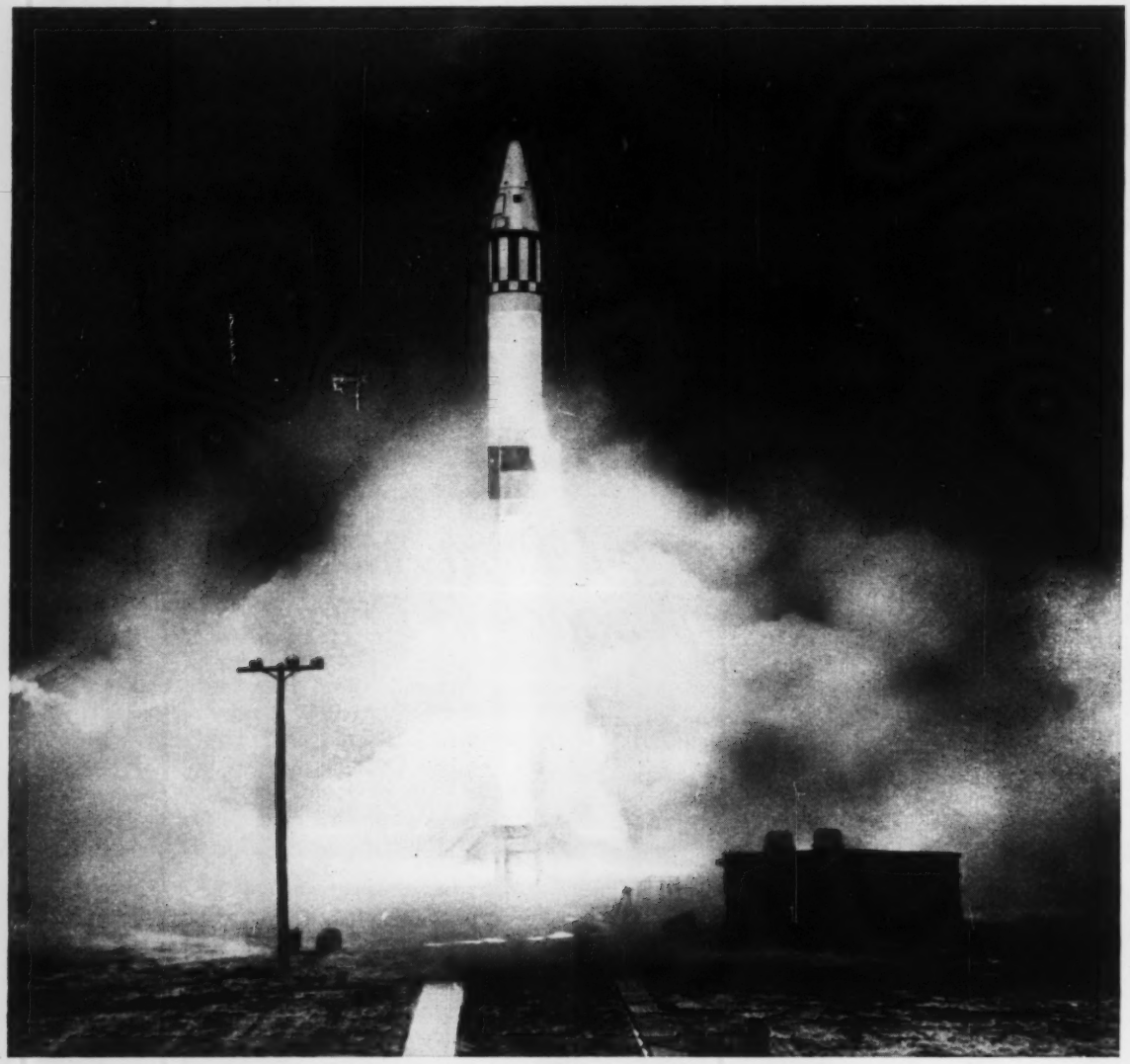
THE turbine wheel that powers many of our missiles has to be made from a very special kind of steel. A steel that can spin at fantastic speeds—in an inferno of red hot gasses—without flying apart like putty.

Finding just the right steel was a tough problem. But the kind of problem Timken Company metallurgists have been solving for 28 years. And very similar to one they'd solved during World War II.

One of the hurdles in designing America's first jet engine was to find a steel for the turbine wheel that would take the tremendous heat and stress. And that problem was solved when Timken Company metallurgists developed a new kind of "super alloy" steel—16-25-6. Now the question was: Would the steel that got jets off the ground do the job for missiles?

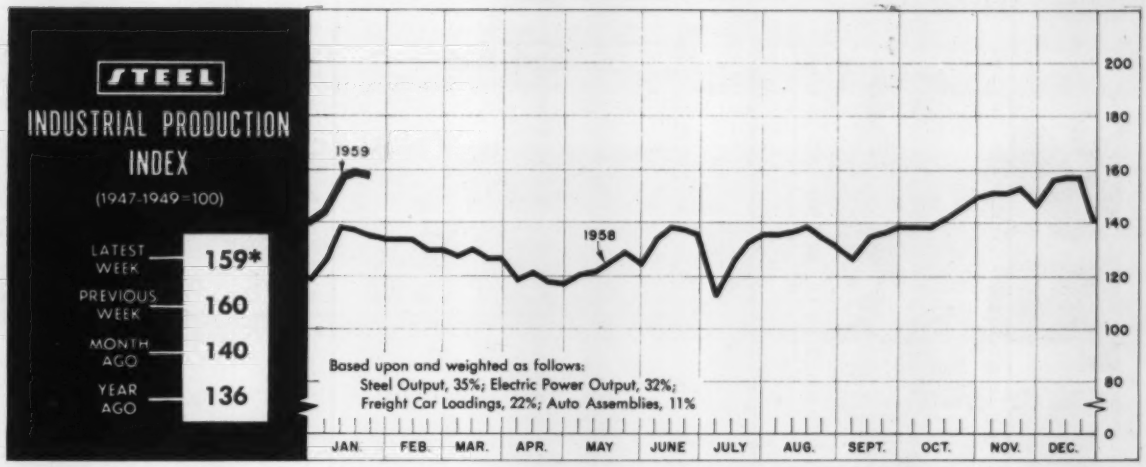
Missile makers tried it—and it worked! Now one of the big problems in missiles is solved—with the help of Timken® steel.

Whatever your steel problem, Timken Company metallurgists have a steel to solve it. And the skill to solve it economically. Why not give them a call? The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable address: "TIMROSCO".



TIMKEN® *Fine Alloy* STEEL

The Timken Roller Bearing Company, Canton 6, Ohio. Cable: "TIMROSCO". MAKERS OF TAPERED ROLLER BEARINGS, FINE ALLOY STEELS AND REMOVABLE ROCK BITS



*Week ended Jan. 24.

Recovery Alters Employment Patterns

THE BUSINESS RECOVERY brings changing employment patterns with it.

• **Evidence**—STEEL's industrial production index is at its highest level in 22 months (near 160 per cent of the 1947-49 base period). Employment is about 64 million, or about the same as it was in March, 1957, the last time the index broke into the 160s. (Seasonal factors in the two periods are similar.) But the size of the labor force has grown about 1.3 million in the two year span. It may be a coincidence, but that is also the difference in unemployment figures between the two periods.

The composition of the labor force in the last two or three years has also changed, just as the product mix of the economy has changed. Manufacturing payrolls are down, but the big cut has been in durable goods rather than in nondurables. Mining, transportation, and construction employment are below the March, 1957, figures. The slack has been taken up by wholesale and retail trades, finance and real estate, service and maintenance, and government.

• **Hardest Hit** — Because of this change in pattern, large scale unemployment is concentrated in the industrial centers. One recent survey shows that up to 14 per cent of the labor forces in such cities as Detroit, Chicago, Philadelphia, Cleveland, and New York are out of work. Nationally, the total is 4.1 million persons. While this is well below the recession high of 5.5 million last summer, it is still considerably higher than you might expect from today's economic activity.

Aside from normal growth considerations, the causes most commonly cited for mass joblessness include technological advances (often mistakenly lumped under automation), modernization of obsolete equipment, a shift in emphasis in defensework, and the slump in heavy durable goods. It all adds

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Production (1,000 net tons)[2]	2,212[1]	2,056	1,459
Electric Power Distributed (million kw-hr)	13,200[1]	13,324	12,399
Bituminous Coal Output (1,000 tons)	8,295[1]	8,145	8,440
Crude Oil Production (daily avg—1,000 bbl)	7,100[1]	7,087	6,923
Construction Volume (*ENR*—millions)	$388.1	$301.6	$218.9
Auto, Truck Output, U. S., Canada (*Ward's*)	159,580[1]	166,693	131,945
TRADE			
Freight Carloadings (1,000 Cars)	575[1]	586	551
Business Failures (Dun & Bradstreet)	294	321	260
Currency in Circulation (millions)[3]	$31,385	$31,710	$30,878
Dept. Store Sales (changes from year ago)[3]	+5%	+4%	+2%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$26,294	$24,918	$23,464
Federal Gross Debt (billions)	$282.8	$282.7	$274.7
Bond Volume, NYSE (millions)	$34,717	$38,405	$33,122
Stocks Sales, NYSE (thousands of shares)	19.3	21.0	11.6
Loans and Investments (billions)[4]	$94.7	$95.5	$87.0
U. S. Govt. Obligations Held (billions)[4]	$31.3	$31.5	$25.9
PRICES			
STEEL's Finished Steel Price Index[5]	247.82	247.82	239.15
STEEL's Nonferrous Metal Price Index[6]	214.9	217.5	200.7
All Commodities[7]	119.6	119.4	118.8
Commodities Other than Farm & Foods[7]	127.4	127.3	125.9

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1959, 2,831,488; 1958, 2,699,173. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-39=100. [6]1936-39=100. [7]Bureau of Labor Statistics Index, 1947-49=100.

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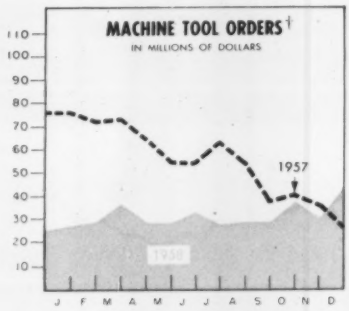
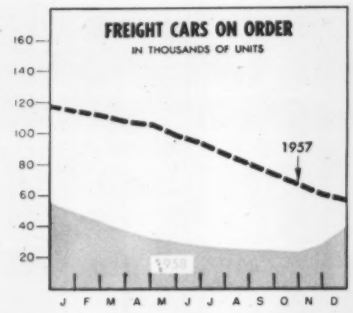
ACME WELDING
DIVISION OF THE UNITED TOOL & DIE CO., WEST HARTFORD 10, CONN.
Machine bases, components, environmental and test equipment, pressure vessels . . . welded fabrications of every kind. Extensive cutting, forming, welding, X-ray and gamma ray equipment. Qualified welders. All recognized codes. Send your drawings and specifications to us for prompt detailed quotations.



	New Orders 1958	New Orders 1957	Shipments 1958	Shipments 1957
Jan.	26,850	75,500	57,800	99,900
Feb.	28,300	71,900	48,050	103,350
Mar.	36,150	72,750	54,150	115,600
Apr.	28,300	64,300	50,900	110,650
May	28,050	53,650	50,100	104,300
June	32,100	52,800	45,500	106,950
July	26,550	62,650	29,700	81,450
Aug.	28,300	52,900	29,800	78,300
Sept.	28,100	36,750	34,900	82,050
Oct.	37,000	39,700	41,400	76,050
Nov.	30,700	35,150	33,650	59,750
Dec.	42,950*	24,850	42,850*	70,100
Totals	373,350	642,900	518,800	1,088,450

†Metal cutting and metal forming.
*Preliminary.
National Machine Tool Builders' Assn.



	Awards 1958	Awards 1957	Backlogs (end of month) 1958	Backlogs (end of month) 1957
Jan.	401	6,209	48,787	114,656
Feb.	287	4,032	43,750	111,965
Mar.	193	3,199	38,027	107,708
Apr.	278	6,453	32,908	105,190
May	1,370	3,246	30,386	97,006
June	317	4,729	27,757	91,810
July	376	968	25,994	85,229
Aug.	1,773	2,928	25,611	79,258
Sept.	1,580	3,162	24,982	71,981
Oct.	781	2,202	23,670	65,718
Nov.	6,295	1,070	27,962	59,194
Dec.	3,830	3,443	27,596	55,941
Totals	17,481	41,641		

American Railway Car Institute.

Charts copyright, 1959, STEEL.

up to the fact that management has left few stones unturned to cut production costs.

• **Situation To Reverse**—Heavy unemployment is likely to last about as long as the critical shortage of labor lasted during the boom—two years. Then get set for another pinch starting late this year, especially in the middle aged, skilled, and semiskilled groups. A labor shortage is still one of this country's biggest long range problems.

In 1957, the Department of Labor asserted that the nation would need 10 million more workers by 1965 to support a gross national product of $560 billion and a population of 193 million. The department has since revised its population estimate upward to 195.7 million, and a GNP of $560 billion is now considered conservative. It follows that the estimate of 10 million more workers is conservative.

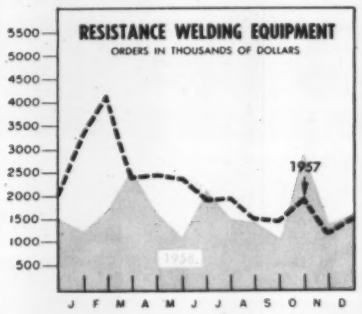
It could well be that the causes for today's high unemployment will be at least the partial solution to the shortages of the 1960s.

Unemployment Will Lag

Speakers at the National Industrial Conference Board's meeting last month at New York gave little reason for optimism about unemployment. They see 1959 as a year of growth and maybe a few records. But the gains won't be enough to absorb the current jobless workers, much less take care of anticipated growth in the labor force.

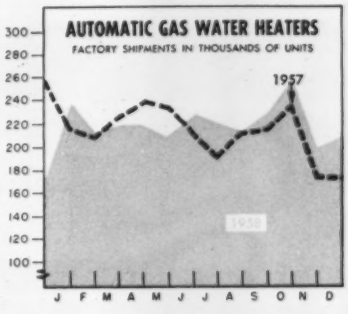
T. F. Patton, president of Republic Steel Corp., sees improvement for most of the industry's customers this year. But production will be just under 110 million tons, only fifth best on record. (Despite the continued uptrend in production, employment in the industry is below 600,000, compared with the record monthly average of 684,610 in 1956 when 115 million tons were produced.)

Roy C. Ingersoll, chairman of Borg-Warner Corp., terms his auto output estimate for 1959 (5 million to 5.2 million) as "somewhat on the low side." He cites other estimates ranging all the way up to 6.1 million. Unless the higher range is reached, employment is not likely to stage a startling comeback in automotive areas. General Motors Corp. is turning out more cars now than it did a year ago—but with 60,000 fewer workers. Ford Motor Co. is also producing more cars today than it did a year ago—with



	Net Orders		Shipments	
	1958	1957	1958	1957
Jan.	1,243	3,310	1,422	3,161
Feb.	1,683	4,161	1,615	2,386
Mar.	2,550	2,360	1,659	2,845
Apr.	1,684	2,429	1,963	3,111
May	1,121	2,340	1,750	2,891
June	2,113	1,936	2,346	2,735
July	1,534	1,943	2,342	3,194
Aug.	1,431	1,501	1,419	2,591
Sept.	1,060	1,463	1,125	2,528
Oct.	2,885	1,933	1,559	1,953
Nov.	1,409	1,167	1,102	2,227
Dec.	1,608	1,501	1,425	1,969
Totals	20,721	26,044	19,726	31,591

Resistance Welder Manufacturers' Assn.



	Shipments—Units		
	1958	1957	1956
Jan.	235,400	214,900	239,000
Feb.	216,300	208,200	259,200
Mar.	221,600	226,600	267,500
Apr.	221,900	238,200	241,200
May	210,000	233,400	244,300
June	231,000	211,700	251,500
July	221,400	192,500	231,900
Aug.	215,500	210,300	243,500
Sept.	230,000	215,500	218,100
Oct.	259,400	234,700	224,700
Nov.	200,800*	173,500	184,400
Dec.	209,300*	172,800	156,800
Totals	2,675,000*	2,532,300	2,762,100

*Preliminary.
Gas Appliance Mfrs. Assn.

close to 20,000 fewer workers.

Construction is pushing to another record in 1959, about 5 per cent ahead of 1958, predicts Joseph A. Grazier, president of American Radiator & Standard Sanitary Corp. Physical increase will not be as great. But it is doubtful that employment will go up in this field. Even though 1958 set a record, employment was consistently below the levels of the previous year. For the short term, construction will contribute to unemployment because of seasonal patterns, turning up again in the spring.

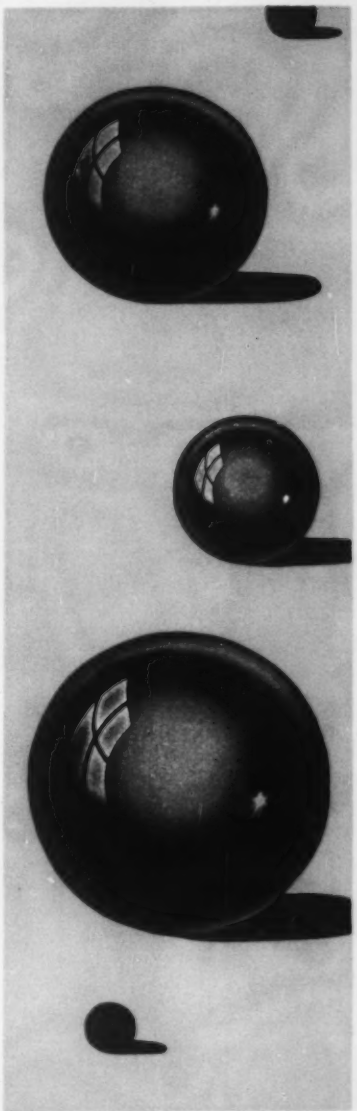
The outlook for the railroads is "better than a year ago, but not as bright as we would wish," declares William White, president of the Delaware & Hudson Co. But employment prospects are dim. Mr. White points out that railroad employment has declined from 1,350,000 in 1946 to about 850,000.

The one bright spot cited by the panelists: The public utilities. Charles E. Eble, president of Consolidated Edison Co. of New York Inc., forecasts an increase in sales this year of 8 per cent for electric utilities and 5.6 per cent for gas utilities. Employment advanced between 1 and 2 per cent in 1958, and Mr. Eble foresees a similar increase this year, bringing the industry's payrolls to 575,000-600,000 by 1960.

Tool Orders Reverse Trend

The machine tool industry is holding its breath until January figures for new orders are compiled. If they're as good as the December figures (see graph and table, Page 67), there will be some long suppressed sighs of relief. Orders for both cutting and forming tools in December came to $42,950,000, the highest total since August, 1947. Both segments of the industry increased significantly, with unusually heavy foreign orders contributing to the gain in forming tools.

Industry observers point to the fourth quarter as a possible turning point. It was the first quarter in which new orders pointed upward since the similar period of 1957. But other observers feel that January, and even February, figures must be as good if this is to develop into a genuine upturn. One industry official says: "From the scuttlebutt I've heard, January is shaping up at least as good as December. I think the long awaited upturn is here. New orders this year should reach at least $450 million."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Ohio Rolls

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OHIO IRON AND STEEL ROLLS

Carbon Steel Rolls	Flintuff Rolls	Denso Iron Rolls
Ohioloy Rolls	Double-Pour Rolls	Nickel Grain Rolls
Ohioloy "K" Rolls	Chilled Iron Rolls	Special Iron Rolls
Nioloy Rolls	Forged Steel Rolls	

The Ohio Steel Foundry Co.

LIMA, OHIO

LIMA... Virtually at the center of the steel industry

PLANTS AT LIMA AND SPRINGFIELD, OHIO

JOSEPH B. LANTERMAN
heads American Steel Foundries

FRANK U. HAYES
president of Sperry Products

WILLIAM S. DICKEY
Western Design project eng.

EUGENE J. HOCHDANNER
Latrobe Steel chief eng.

Joseph B. Lanterman, former vice president, was elected president, **American Steel Foundries,** Chicago. He succeeds **Charles C. Jarchow,** who was elected chairman.

Robert Watchorn II was elected vice president, **Butcher & Hart Mfg. Co.,** Altoona, Pa.

Robert V. Peterson was named Detroit district manager, **Latrobe Steel Co.,** Latrobe, Pa. He succeeds **James H. Dodge,** recently transferred to the home office as sales manager, Specialty Steels Div.

Jack B. Laramy was made sales manager, Harrison, N. J., Div., **Worthington Corp.** For the last three years, he served as assistant manager-Marketing Div., and eastern regional sales manager.

Badger Tool Works, Racine, Wis., appointed **Earl S. Godard** vice president and general manager. He was with Walker Mfg. Co.

Arma Div., American Bosch Arma Corp., Hempstead, N. Y., appointed **Dr. Bernard Litman** assistant chief engineer-research; **Wen Tsing Chow,** assistant chief engineer-missile guidance.

Kenneth H. Truesdell was made sales manager for special products of **Read Standard Div.,** Capitol Products Corp., York, Pa. He was sales manager with Pfaff Kendall.

Joseph G. Kropka, in addition to present duties as manager of foundries, **Chain Belt Co.,** Milwaukee, assumes added responsibility for casting sales.

Frank U. Hayes was appointed president and general manager, **Sperry Products Inc.,** Danbury, Conn. He was vice president and assistant general manager of Bullard Co. **J. B. Farwell,** former president - general manager of Sperry, continues as chairman and in a consulting capacity.

William S. Dickey was made project manager for the Santa Barbara, Calif., Div., **Western Design,** a division of U. S. Industries Inc. He was supervisor of the Southwestern Laboratories of Armour Research Foundation, Tucson, Ariz.

Hans Heilbronner was named plant manager of the extrusion, molding and fabricating sections at **Carlon Products Corp.'s** new facilities in Aurora, Ohio. He was plant manager, Fitchburg Div., Commonwealth Plastics.

George A. Kessel, vice president, **Electric Auto-Lite Co.,** Toledo, Ohio, was given added responsibility for operations of the plant in Sarnia, Ont.

Louis A. Carapella, recently executive technical director of Jessop Steel Co. and Green River Steel Corp., was elected a vice president of **Sylvania-Corning Nuclear Corp.,** Bayside, N. Y.

Page Steel & Wire Div., Monessen, Pa., American Chain & Cable Co. Inc., appointed **E. M. Spadafore** assistant plant manager; **V. J. Dobos,** wire mill superintendent; **L. R. Wetzel,** superintendent, Coating & Heat Treating Dept.

Eugene J. Hochdanner was appointed chief engineer at **Latrobe Steel Co.,** Latrobe, Pa. He was works engineer at Allegheny Ludlum Steel Corp.'s Brackenridge Works.

A. Barr Comstock Jr. was named vice president-sales, **Gary Screw & Bolt Div.,** Gary, Ind., Pittsburgh Screw & Bolt Corp. He was general sales manager of the parent company in Pittsburgh.

George R. Gent fills the new post of manager of welding, brazing, and soldering product sales, **Aluminum Co. of America,** Pittsburgh.

Arthur W. Sellers, general sales manager, was named vice president-sales, **R. D. Werner Co. Inc.,** New York. At the factory in Greenville, Pa., **W. R. Manson** was named vice president-research and development; **R. L. Werner,** chief engineer; **G. E. Kuhn,** plant superintendent.

Thomas I. Moore, general superintendent, was promoted to manager, Monsanto, Ill., electrolytic plant, **American Zinc Co.,** subsidiary of American Zinc, Lead & Smelting Co. He succeeds **L. P. Davidson,** retiring Feb. 28.

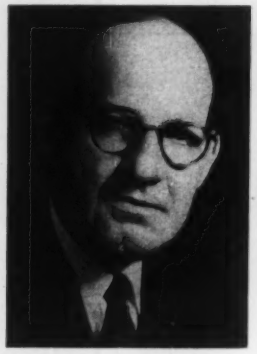
Thurman F. Naylor was appointed sales manager, Metal Products Div., **Koppers Co. Inc.,** Baltimore.

Lansdale Tube Co., Lansdale, Pa., division of Philco Corp., appointed **Ernest Lyle** technical administrative assistant to the plant manager; **Howard Steller,** manager of production and engineering, receiving tube operation; **Max Wilcox,** chief engi-

R. LESLIE MULLEN

GEORGE J. NEUMANN

executives of Lehigh Structural Steel



CHARLES W. ELSTON

GEORGE E. BURENS

general managers of GE departments

neer, receiving tube production engineering group.

R. Leslie Mullen, was elected president and chief executive officer of **Lehigh Structural Steel Co.**, Allentown, Pa. **George J. Neumann** was elected executive vice president. Mr. Mullen succeeds his father, the late **Thomas R. Mullen**, who was one of the founders of the company.

Vernon W. Deinzer was named executive vice president, **McCauley Industrial Corp.**, Dayton, Ohio. **Walter B. Voisard** was named vice president-engineering; **Dr. Walter Rudisch**, vice president, Power Transmission Div.; **L. W. Halstead**, vice president-sales.

Dr. Arthur B. Backensto Jr. was appointed research metallurgist at **Alan Wood Steel Co.**, Conshohocken, Pa. He heads a research program directed toward increased usage of iron powder.

Roger A. Ives was made manager of sales, **Brown-Wales Co.**, Cambridge, Mass. He was assistant sales manager.

Raymond T. Zwack was named manager of development engineering at **Solar Aircraft Co.'s** Des Moines, Iowa, Div., a new post. He was staff engineer for Curtiss-Wright Corp., in charge of advanced missile, aero, and space projects.

Robert B. Burris was made plant manager, **Faultless Caster Corp.**, Evansville, Ind.

Samuel D. Greiner was made assistant product manager, Motor-Driven Compressor Section sales, **Cooper-Bessemer Corp.**, Mt. Vernon, Ohio.

Charles W. Elston was appointed general manager, Gas Turbine Dept., **General Electric Co.**, at Schenectady, N. Y. He succeeds **Lewis J. Burger**, named general manager, Switchgear & Control Div., Philadelphia. Vice President **George E. Burens**, former general manager, Switchgear & Control Div., was appointed general manager, Lamp Div., at Nela Park, Cleveland. He succeeds Vice President **Donald L. Millham**, now a consultant, Lamp Div.

Howard M. Graff was made general manager of raw materials, **Inland Steel Co.**, Chicago. Former manager of Inland's iron ore mines in Ishpeming, Mich., he succeeds **Carl B. Jacobs**, recently made vice president-raw materials.

Frederick G. Jaicks was appointed general manager of **Inland Steel Co.'s** Indiana Harbor Works, East Chicago, Ind. He is succeeded by **Louis R. Berner** as assistant general manager of primary production. **Richard G. Phelps** was named to Mr. Berner's former post of manager, steel production, and is replaced as superintendent of No. 3 open hearth by **Albert M. Kroner. Francis D. Nelson** was made assistant superintendent of the open hearth.

Phillip Erhard was appointed purchasing agent of Crucible Steel Co.'s **Sanderson-Halcomb Works**, Syracuse, N. Y. He succeeds **Frank G. Hefti**, retired.

T. H. Hagan, former general superintendent, Gadsden, Ala., **Republic Steel Corp.**, was appointed assistant district manager, southern steel district.

Charles M. toeLaer was made general sales manager, Hanovia Lamp Div., **Engelhard Industries Inc.**, Newark, N. J. **Walter F. Doring Jr.** was made sales manager of Charles Engelhard Inc., an associated company.

William J. Anderson was made regional sales manager (Midwest and

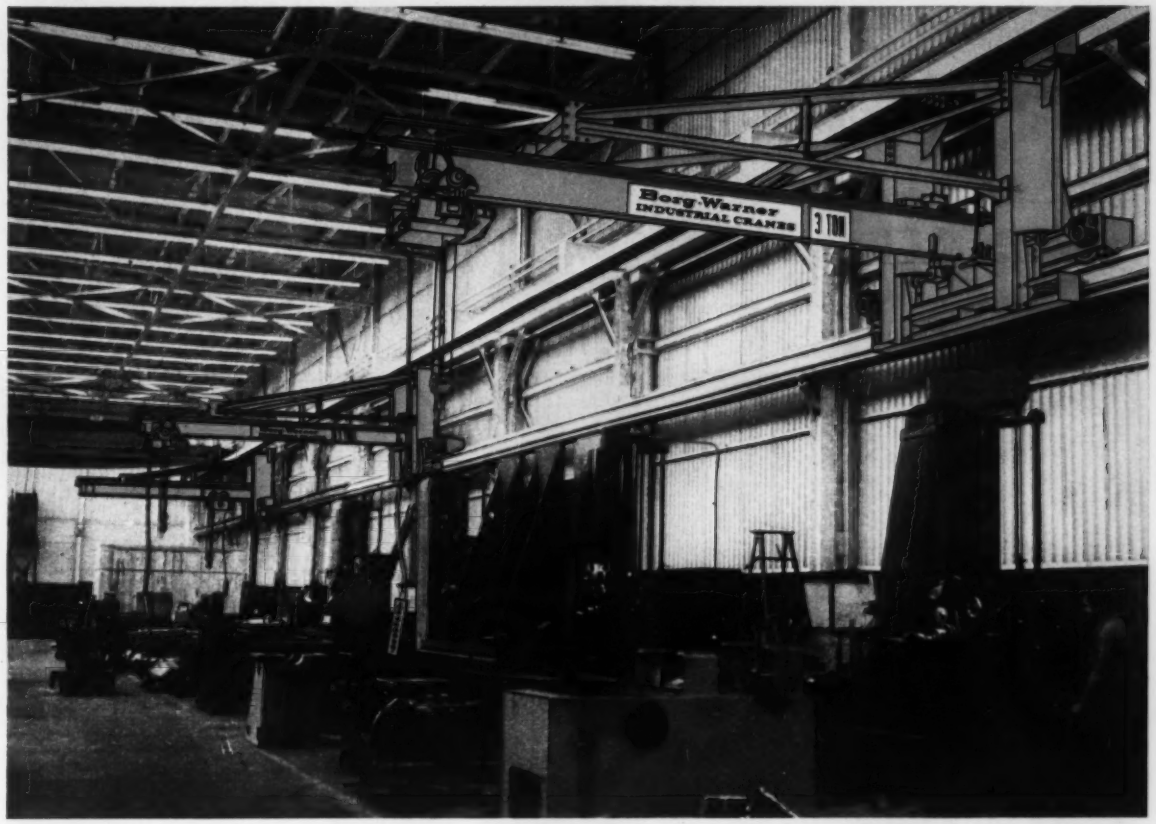
FREDERICK G. JAICKS

LOUIS R. BERNER

RICHARD G. PHELPS

appointments at Inland Steel's Indiana Harbor Works

Increased production with lower handling costs!



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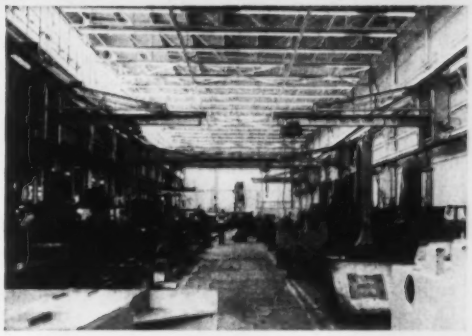
When used in main crane bays, wall traveling jibs give maximum hook coverage and the greatest effective use of otherwise unproductive plant areas. Heavy overhead cranes are left free for other duties.

Individual jib cranes may be used at any point along the runway. Or, if greater lifting capacity is needed, two or more jibs can team up on the job. Simple push-button controls allow floor operation.



Borg-Warner Industrial Cranes makes many other types of jib cranes and overhead cranes in capacities up to 150-tons. For practical answers to your materials handling problems call on Borg-Warner Industrial Cranes. Write today.

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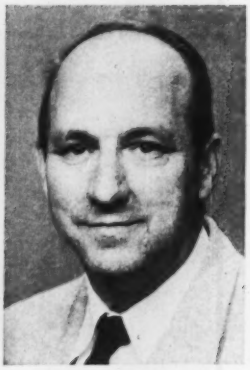
FREDERICK J. THOMAS
Laminated Shim p. a.

ROBERT E. MITCHELL
Eaton div. plant manager



CLIVE M. YEOMANS
heads new Victoreen div.

GEORGE H. CROCK
Robertshaw-Fulton div. post

GEORGE O. HALLENBECK
Firestone Steel Products post

DR. LOUIS G. DUNN
Space Technology president

East) for **Macwhyte Wire Rope Co.** He is in Kenosha, Wis.

George H. Crock was named works manager of the new Indiana (Pa.) Div. of **Robertshaw-Fulton Controls Co.** The division was formed to specialize in manufacture of precision electrical controls. Mr. Crock has been associated with the Indiana facility for the last two years. He formerly was works manager at Youngwood, Pa., for Robertshaw Thermostat Div.

Courtland F. Carrier was made sales manager, **Triangle Mfg. Co.**, Oshkosh, Wis.

Harry S. Evans was made superintendent of pattern shops, West Allis, Wis., Works, **Allis-Chalmers Mfg. Co.** He succeeds **Albert F. Pfeiffer,** who was made consultant, foundry and pattern shops.

John P. Gaeth was elected vice president and treasurer, **Osborn Mfg. Co.**, Cleveland. **Alfred J. Chandler** was elected vice president-sales, Brush Div.

Firestone Steel Products Co., Akron, subsidiary of Firestone Tire & Rubber Co., appointed **George O. Hallenbeck** plant manager, Wyandotte, Mich.; **Edward A. Reno,** superintendent, Wyandotte plant; **Andrew L. Sardone,** production manager, Akron plant. **Allan C. Smith** was named division sales manager, special products, for the company.

Dr. Louis G. Dunn was elected president, **Space Technology Laboratories Inc.**, Los Angeles. **Dr. Edward B. Doll** was elected a vice president. **Lt. Gen. J. H. Doolittle** (USAF, ret.) is chairman of the laboratories, which has technical direction and systems engineering responsibilities for the Air Force's ballistic missiles and related space programs.

Peter E. Caron was named manager, Byproduct Sales Dept., **American Smelting & Refining Co.**, New York. He succeeds **Donald K. Wright,** retired.

Walter L. Davidson was made sales manager, Engineering Works Div., **Dravo Corp.**, Pittsburgh.

Frederick J. Thomas was appointed purchasing agent, **Laminated Shim Co.**, Glenbrook, Conn. He was with the Purchasing Dept. of Electrolux Corp.

Robert E. Mitchell was appointed plant manager, **Dynamatic Div.**, Eaton Mfg. Co., Kenosha, Wis. He was a member of Eaton's central industrial relations staff in Cleveland.

Clive M. Yeomans was appointed to head the new Industrial Automation Div. of **Victoreen Instrument Co.**, Cleveland. During the last year, and immediately prior to joining Victoreen, Mr. Yeomans served as manager, Nuclear Div., Martin Co.

Karl Koehn was made assistant vice president, **Hunter Construction Co.**, Youngstown. He was with Commercial Contracting Co., Detroit.

Joseph J. Hauser was made sales manager, **Sahlin Engineering Co. Inc.**, Birmingham, Mich.

John T. Castles was named manager of **General Electric Co.'s** Chemical Development Operation, Pittsfield, Mass. He was sales manager, Silicone Products Dept., Waterford, N. Y. Mr. Castles and his staff have headquarters at Bridgeport, Conn., although the process and product laboratories of the operation continue at Pittsfield.

Robert B. Gillooly was made assistant manager, sheet sales, **Wheeling Steel Corp.**, Wheeling, W. Va. Former manager, Wheeling district sales, he is succeeded by **F. J. Howie.**

William F. Rogge, general manager, Industrial Div., was elected vice president, **Aeroquip Corp.**, Jackson, Mich.

Edward A. Loria was made development manager, high temperature and corrosion resistant alloys, **Climax Molybdenum Co.**, division of American Metal Climax Inc. He has headquarters in Pittsburgh.

E. L. Spencer was made general manager; **Gervase M. Magrum,** assistant general manager, **Buffalo Hydraulics Div.**, Houdaille Industries Inc.

Kenneth B. Elliott was named vice president-sales, **Monogram Precision Industries Inc.**, Culver City, Calif. He held a similar position with Houston-Fearless Corp.

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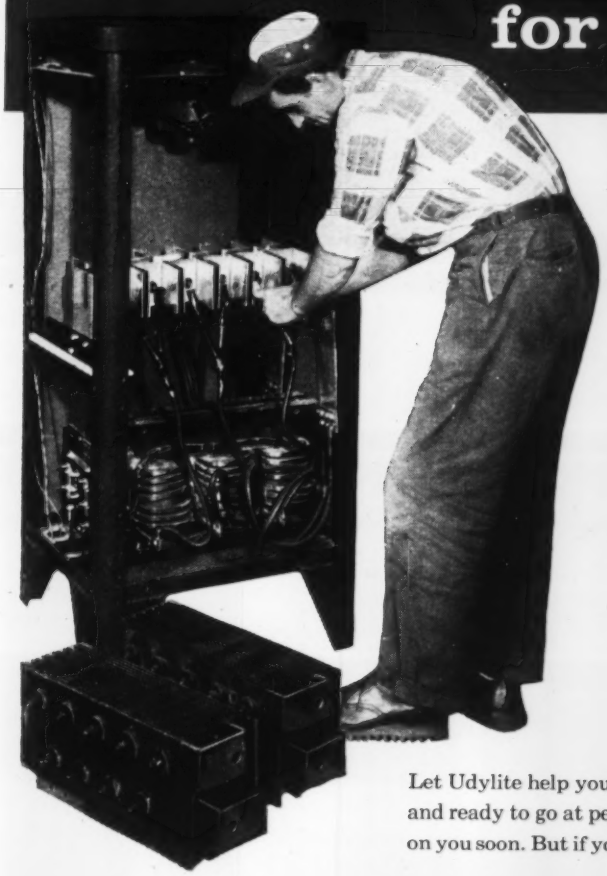

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2. **A SPECIAL SERVICE . . .** As an alternate plan, your old rectifier can be returned to Udylite for *factory* installation of the silicon replacement stacks by trained rectifier specialists. At the same time, your rectifier will be completely overhauled and tested so that it will be returned to you renewed and ready for the longer life and high efficiency of Udylite silicon.
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PROJECT ALERT

PHOENIX
IRON & STEEL COMPANY

has changed its name to

PHOENIX
STEEL CORPORATION

To fully reflect the nature of the company today, Phoenix Iron & Steel Company, a subsidiary of Barium Steel Corporation, has changed its name to Phoenix Steel Corporation.

The change in name was suggested by the program of modernization upon which this 176-year-old company is presently embarked. With new equipment, new products and new plants, and with a new steel making facility currently being planned, the new name more accurately depicts this modern steel producer, Phoenix Steel Corporation.

Pittsburgh, Sharon May Merge

Combined capacities would rank ninth at 3,421,000 net tons of steel ingots, 1,834,000 of pig iron, and 1,224,000 of coke. Management decision awaits outcome of talks

MERGER of Pittsburgh Steel Co., Pittsburgh, and Sharon Steel Corp., Sharon, Pa., is being discussed by the managements of these integrated firms. During World War II and for a short time thereafter they were headed simultaneously by Henry A. Roemer, former chairman and president of both companies. His son, James A. Roemer, is chairman of Sharon Steel.

If the merger is consummated, it would bring the consolidated firm within the ranks of the ten largest steel producers.

Sharon and Pittsburgh are regarded as aggressive producers, particularly interested in the high-priced steels, including alloys. Sharon produces stainless; Pittsburgh doesn't. Sharon owns one-third interest in Mallory-Sharon Metals Corp., Niles, Ohio, a fully integrated producer of titanium, zirconium, and similar metals.

Annual net ton capacities of the companies as of Jan. 1, 1959, are listed as follows:

	Pittsburgh Steel Co.	Sharon Steel Corp.
Coke	828,000	396,000
Pig Iron	950,000	884,000
Steel Ingots	1,560,000	1,861,000

Both companies (including subsidiaries) offer sheets, strip, and tubing. Pittsburgh Steel also produces wire, and electroplated stock; Sharon, universal plates.

Bridgeport Combines Units

Hunter - Douglas Aluminum Corp., Riverside, Calif., and Flemington, N. J., a wholly owned subsidiary of Bridgeport Brass Co., Bridgeport, Conn., has been integrated into the parent company. The facilities are now known as the Riverside and Flemington plants of Bridgeport Brass Co. Plans are being made to manufacture some of the company's brass, copper, and aluminum products at Riverside in addition to present consumer and defense items. Herman Kline has been named plant manager at Riverside. Leslie Menns Sr. has been named administrator of operations. K. M. MacQuarrie continues as manager at Flemington.

Orders Two Rolling Mills

Cochran Foil Corp., a subsidiary of Anaconda Co., New York, has ordered two, 64 in., 4 high aluminum foil mills. The expenditure is the largest item of a $2 million expansion program at the Louisville plant. The mills will be produced in the Glassport, Pa., plant of Pittsburgh Engineering & Machine Div., Pittsburgh Steel Foundry Corp. The mills are scheduled for operation early next September.

Hunter Buys Full Control

Olin Mathieson Chemical Corp., New York, sold its majority interest in Hunter Engineering Co., Riverside, Calif., to J. L. Hunter. He becomes the sole owner and will continue to produce aluminum sheets, strip, and extrusions. Olin Mathieson will retain its rights to a continuous casting process for aluminum developed during the period of joint ownership.

Plans Chicago Warehouse

Construction has started on an office and warehouse building at Melrose Park, Ill., for the Stanley Works, New Britain, Conn. The 70,000 sq ft structure will be leased from J. Emil Anderson & Son Inc. It will permit Stanley to consolidate its Chicago operation of the Stanley-Judd, Stanley Steel Strapping, Stanley Tools, Stanley Electric Tools, and Stanley Hardware divisions.

U. S. Gauge Builds

By constructing Plant No. 2, United States Gauge Div., American Machine & Metals Inc., Sellersville, Pa. will be able to consolidate all mass gage production operations under one roof. The new 180,000 sq ft plant frees substantial space in older buildings for greater emphasis on high precision instrumentation controls. The new facility houses all equipment for machining, plating, and painting of gage products.

Enlarges Two Warehouses

Cleveland Cap Screw Co., Cleveland, is expanding its warehousing operations. A new Philadelphia sales office and warehouse at 4237 N. Second St., provides 14,000 sq ft of warehouse space. John J. Deasy is manager. A new Chicago office and warehouse at 133 S. Racine Ave. is under the direction of Frank P. Blonska. Both facilities stock the company's major commercial fastener lines: Hexagon head cap screws, socket screw products, machine bolts, and hexagon and square nuts.

Industrial Firms Renamed

Phoenix Iron & Steel Co., Phoenixville, Pa., changed its corporate name to Phoenix Steel Corp., a subsidiary of Barium Steel Corp. With new equipment, products, and plants, and with a new steelmaking facility being planned, the new name more accurately depicts the producer, officials say.

Martin Steel Products Corp., Mansfield, Ohio, changed its name to Martin Steel Corp. The firm fabricates steel buildings and has produced farm machinery and equipment since purchase in 1956 of Dunham Co., Berea, Ohio.

Cuyahoga Spring Co., wholly owned subsidiary of Republic Industrial Corp., New York, changed its name to Cuyahoga Products Corp. J. K. Esler has been elected vice president in charge of sales.

Northrop Aircraft Inc., Hawthorne, Calif., changed its name to Northrop Inc. Formerly specializing in airframe manufacture, the company has branched out into such areas as missiles, electronics, and space research.

Ideal Industries Inc., Milwaukee, sold its Imprex Div. Now known as Imprex Inc., it will continue to manufacture impregnation equipment and sealants used to seal porous castings. T. W. Juday is president.

Swedlow Plastics Co., Los An-

geles, changed its name to Swedlow Inc. In addition to plastic products, the company makes many other items, including high temperature welded honeycomb cores in stainless steel and superalloys.

Makes Columbium Shapes

Wolverine Tube Div., Calumet & Hecla Inc., Allen Park, Mich., is commercially producing columbium extrusions. The metal is an important construction material for rocket and missile components and atomic powerplants. Wah Chang Corp., Albany, Oreg., supplied the ingots.

Graver Tank Made Division

Formerly a subsidiary, Graver Tank & Mfg. Co. Inc., East Chicago, Ind., is now a division of Union Tank Car Co., Chicago. Phoenix Mfg. Co., Graver Water Conditioning Co., and Lang Co. Inc. were previously made operating divisions of Union Tank Car. Clark Root will continue as president and chief executive officer of Graver Tank, a leading plate fabricator and erector in steels, nonferrous metals, and alloys.

ASSOCIATIONS

Atlantic & Gulf Coasts Drydock Association has been organized with headquarters at 839 17th St. N.W., Washington, D. C. Officers are: President, L. C. Robertson, Newport News Shipbuilding & Drydock Co., Newport News, Va.; vice president, Grady Ashcraft, Alabama Dry Dock & Shipbuilding Co., Mobile, Ala.; and secretary-treasurer, L. S. Goddard, Todd Shipyards Corp., New York. John D. Ferry is executive secretary; George P. Lamb, general counsel.

Henry F. Dever, Minneapolis-Honeywell Regulator Co., Minneapolis, has been elected president of the **Metal Manufacturers' Association**, Philadelphia.

Officers of the **National Association of Corrosion Engineers**, Houston, elected to serve for the 1959-60 term will be installed Mar. 20. They are: President, H. P. Godard, Aluminium Laboratories Ltd., Kingston, Ont.; vice president, G. E. Best, Solvay Process Div., Allied Chemical Corp., New York; and treasurer, A. L. Stegner, Tennessee Gas Transmission Co., Houston.

Address of the **Institute of Welding** and the general secretariat of the **International Institute of Welding** is 54 Princes Gate, Exhibition Rd., London, S. W. 7.

CONSOLIDATIONS

Rome Cable Corp., Rome, N. Y., will merge with **Aluminum Co. of America**, Pittsburgh, subject to approval of Rome stockholders. The firms would combine their electrical conductor, conduit, and accessory activities in a new company, Rome Cable Co.

Dayton Steel Foundry Co., Dayton, Ohio, purchased **Canada Electric Castings Ltd.**, Orillia, Ont. James Walther has been elected president of the Canadian subsidiary, which will produce steel truck wheels.

Federal Pacific Electric Co., Newark, N. J., producer of electrical distribution and control equipment, is acquiring **Economy Fuse & Mfg. Co.**, Chicago. Federal will operate it initially as a subsidiary and later as the Economy Fuse Div.

Carlon Products Corp., Aurora, Ohio, purchased United Pipe & Tube Co., Lubbock, Tex. The plant will distribute Carlon's line of plastic pipe and fittings and will produce plastic coated steel underground pipe for gas distribution, electrical conduit, and all applications requiring corrosion-free metal pipe.

Liquid Carbonic Div., General Dynamics Corp., New York, acquired Industrial Air Products of the South. The purchase includes plants in New Orleans and Pascagoula, Miss. Ralph Brown is sales manager of the New Orleans operation.

Salem-Brosius Inc., through its subsidiary, **Alloy Mfg. Corp.**, Pittsburgh, purchased **R. H. Freitag Mfg. Co.**, Akron, supplier of equipment and precision machined parts.

Texas Instruments Inc., Dallas, and **Metals & Controls Corp.**, Attleboro, Mass., will merge, subject to approval of stockholders. The Texas firm makes electronic and electromechanical systems and apparatus and semiconductor devices. The Attleboro firm fabricates clad metal products, makes thermostatic controls, and provides nuclear fuel elements and cores.

Emerson Electric Mfg. Co., St. Louis, acquired **Imperial Lighting Products Co.**, Latrobe, Pa., and will operate it as a subsidiary, Emerson-Imperial Lighting Co. Paul D. Wilson will continue as president of Emerson Imperial. The company makes lighting fixtures.

NEW ADDRESSES

Blaw - Knox Co., Pittsburgh, moved its west coast headquarters to 305 Adrian Rd., Millbrae, Calif. W. J. Conway is in charge of sales of construction machinery and equipment and warehousing facilities; J. G. McLain, steel plant equipment, roll, and casting sales; and Pierce Walinsky, heavy form sales.

Gerotor May Corp. moved to Cockeysville, Md. Mailing address is Post Office Box 67.

NEW OFFICES

Granite City Steel Co., Granite City, Ill., opened a sales office at 17 Biltmore Center, 2201 Fifth Ave., Moline, Ill., in charge of James E. Carr.

Kee Klamps North America Ltd., Toronto, Ont., opened a branch office at 1079 William St., Buffalo, N. Y. Kee Klamps are malleable iron fittings with setscrews used with pipe to build storage racks, frames for signs and exhibits, railings, and frames.

Polytechnic Research & Development Co. Inc., Brooklyn, N. Y., opened a sales office at 2639 S. La Cienega Blvd., Los Angeles 34, Calif. The office is headed by Lyle Jevons.

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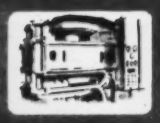

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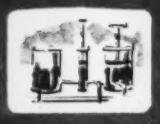

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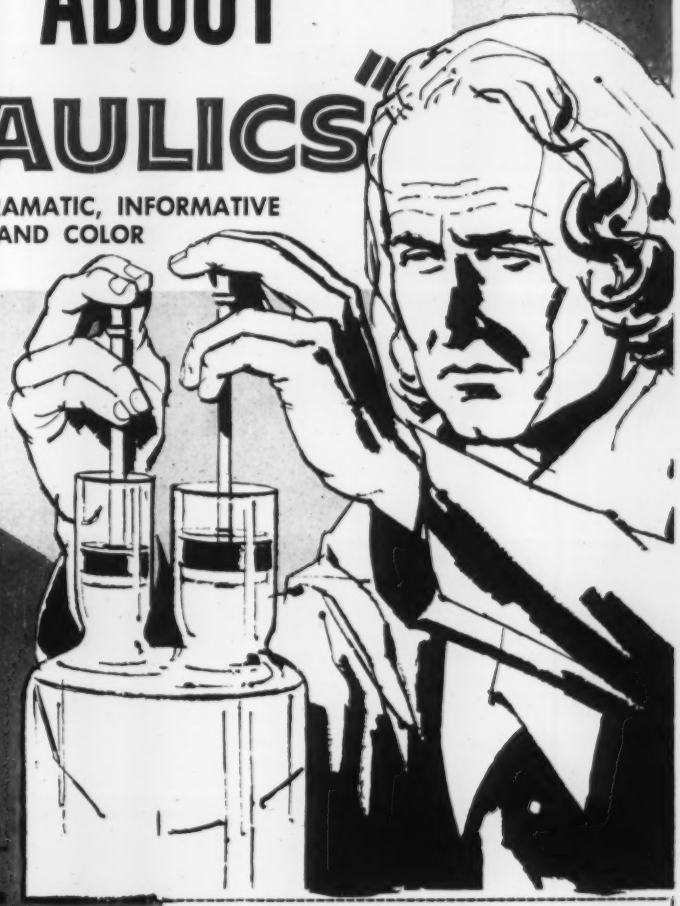

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DEPOSIT-HAPPY NICKEL— Imagine a solution that deposits nickel on anything it touches. Grumman Aircraft Engineering Corp., Bethpage, N. Y., has one. It coats wood, glass, plastics—even finding a tank material that wouldn't become overloaded was a problem. Some materials (wood for example) require palladium chloride for a catalyst. The method deposits nickel at 0.003 in. per hour—published dip rates of older systems range from 0.0008 in. to 0.0012 in. per hour. Cost: About $1 per mil square foot. One idea being tested: Nickel plating a paper base to form an airplane skin.

FOUNDRY LOOKS AT ISOTOPES — Radioisotopes, byproducts of atomic fission, have found their way into the foundry industry. Central Foundry Div. of General Motors is experimenting with them to automatically control the moisture content of molding sand, improve melting procedures, and to detect cracks. Cobalt 60 is an aid in checking casting quality and designing proper gating.

OIL BURNER SLAG— If you use fuel oil for your heat treating or processing furnace, it is occasionally possible to find an unexplained slag buildup on the floor under the burner, says the Carborundum Co., Perth Amboy, N. J. It's caused by vanadium pentoxide in the fuel and can be alleviated by an additive which raises the ash fusion temperature to a point where it is not troublesome. Transatlantic liners which burn some 125,000 gallons in each boiler first posed the problem. A single trip often left a ton of glasslike slag on the floor.

TOWERS FROM TUBING—Welded carbon steel tubing is just the thing for tall towers, says Formed Steel Tube Institute, Cleveland. It has one feature often overlooked by fabricators: Low wind resistance.

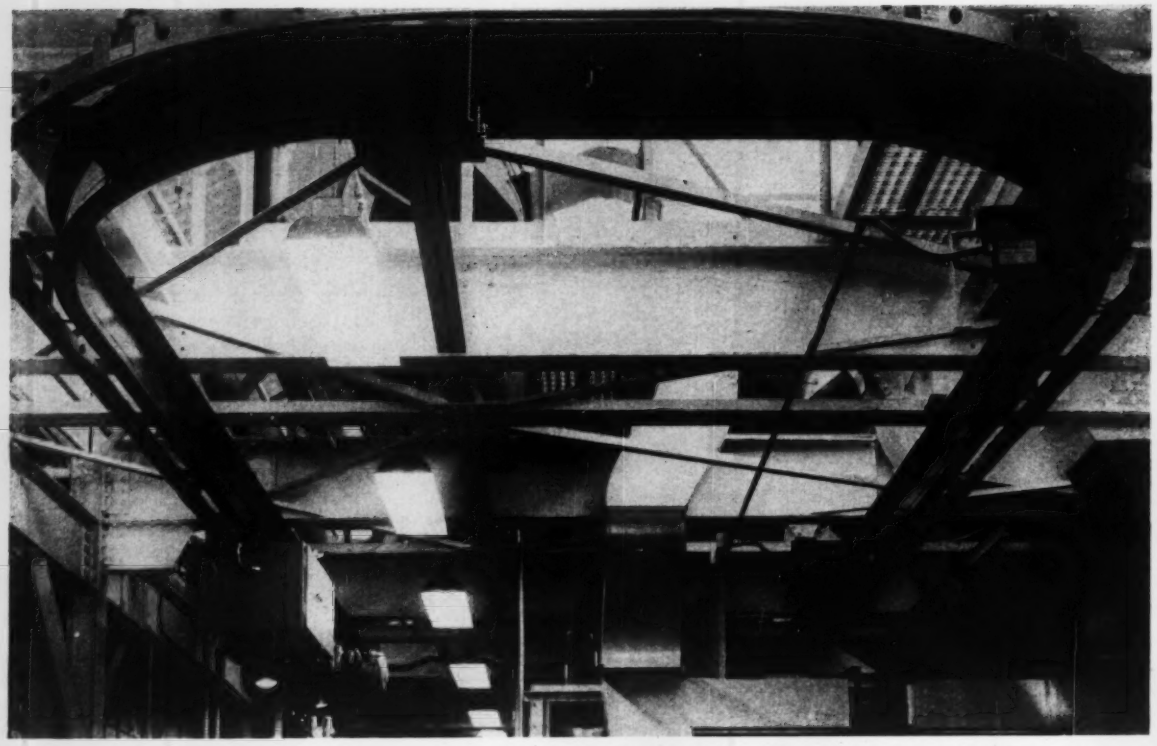
CUTS OPEN HEARTH COSTS— A blocking chrome just introduced by Union Carbide Metals Co., a division of Union Carbide Corp., New York, offers steelmakers a new way to cut costs. Tests run on 4100 and 5100 series steels showed savings of around $1 a ton. Part of its success is attributed to an 11 per cent silicon content (for blocking) which introduces about 0.25 per cent silicon for each 1 per cent of chromium. Operators say they're able to meet chromium specifications consistently even though control is more difficult in a furnace than in a ladle.

LIGHTING PANELS— Now you can get those luminous panels for wall-to-wall lighting you've been hearing about. Sizes range from 2 in. by 2 in. to 2 ft by 2 ft; colors are green, yellow, and blue. The panels use no filaments, contain no gas or vapor, produce practically no heat, and use almost no current (the 4 in. by 4 in. size draws 0.07 watt). Westinghouse Electric Corp., Pittsburgh, calls them Rayescent lamps.

MORE LIGHT—GE's new Power Groove fluorescent lamp gives 15 per more light yet uses only 7 per cent more current, say officials at the firm's Lamp Div., Cleveland. The design depends on more grooves to put the phosphors more directly into the path taken by the current as it flows from one end to the other. The result is more light for a given investment in fixtures.

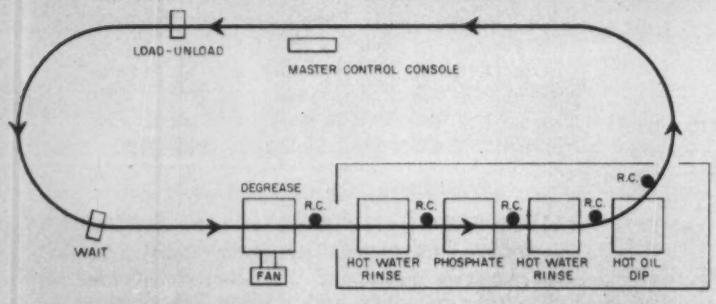
FREES FROZEN COAL—Banks of quartz, infrared tube-lamps are aiding the unloading of coal and ore. During winter months, a load of such material freezes solidly to car sides. One eastern firm is planning an installation that will thaw a car a minute (when upended, the mass falls clear). In spite of the somewhat higher cost of electricity, the method is said to be competitive with other fuels because of greater efficiency: The heat is more widely and evenly distributed, and there are no blank or cold spots.

BETTER STRAIN GAGE—Germanium and silicon semiconductors make far better strain gages than materials now used, says Bell Telephone Laboratories Inc., New York. A Bell Laboratories publication, *Record*, illustrates how some of the devices are made.



This race track shaped monorail carries huge bearings into the phosphating area at right. The outside rail is electrified to supply crane power. At the upper right is the wait station where one crane is held until the other has cleared the first three tanks

Automated Phosphating Line Pays Off in

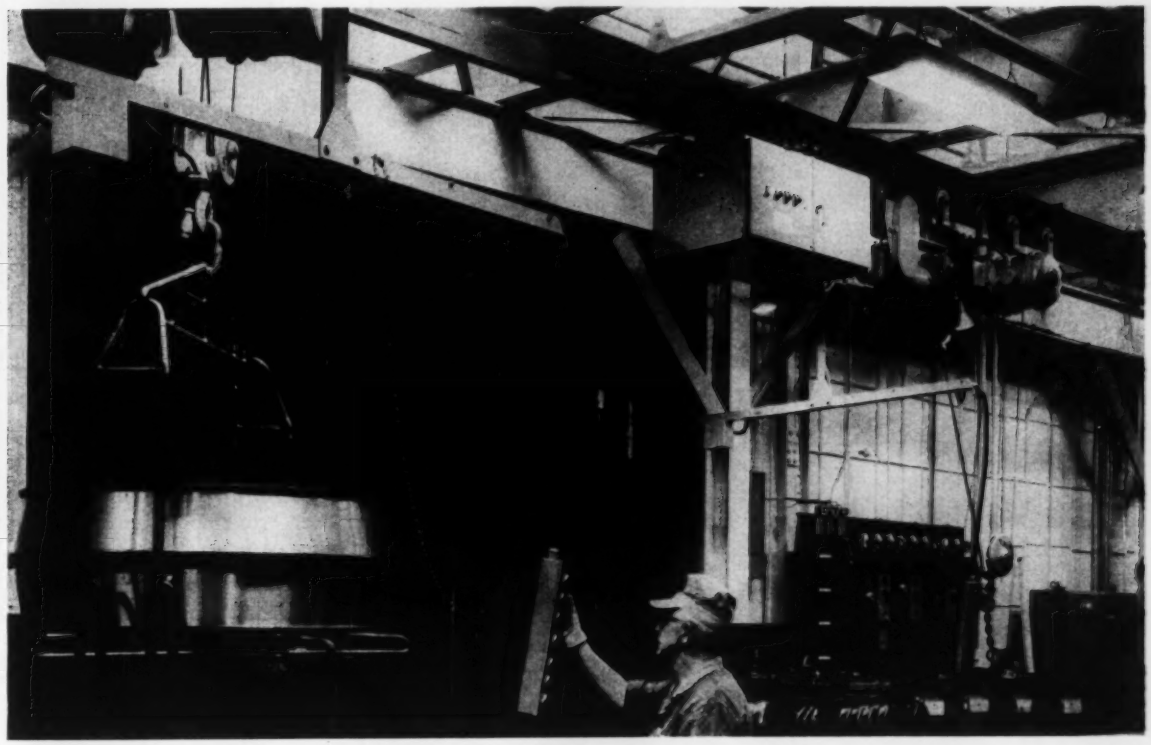


Loaded cranes are moved with manual controls to the wait station. From there on, the cycle is guided by the radio frequency control boxes (marked RC in the drawing) that get instructions from the master control console

Cranes automatically cycle through five dip tanks to phosphate coat large mill bearings. Radio frequency controls are the overseers

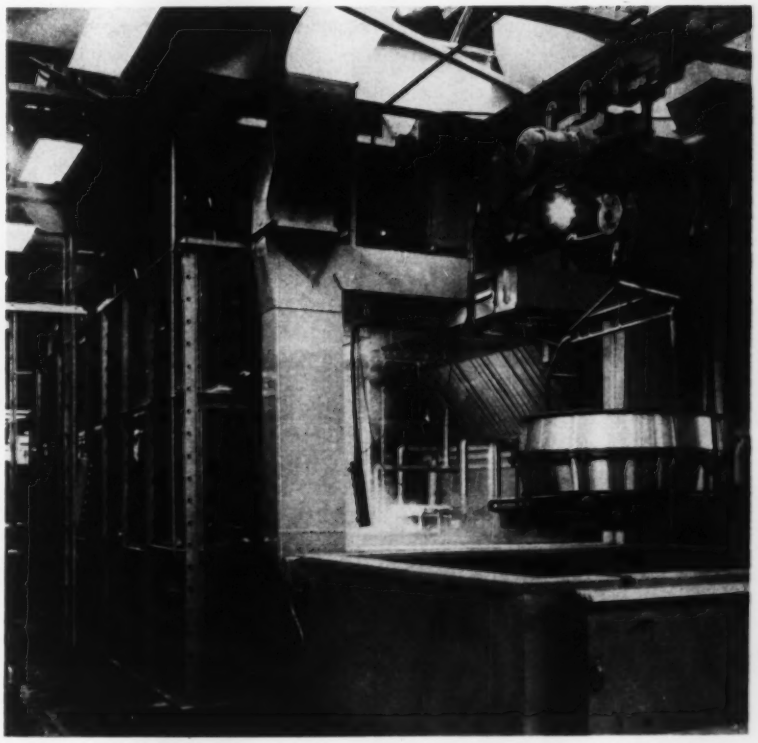
RADIO controlled cranes carry large mill roll bearings through a phosphating line at Timken Roller Bearing Co., Canton, Ohio. The automatic cycling line has returned Timken's investment in less than a year.

• **Savings**—The line cost Timken $187,300 to buy and install. In



The operator lifts the workload and will move it to the wait station. From then on the cycle will be automatic through the bath dips and back to the unload station. The central control console is at rear center, along the wall

First Year



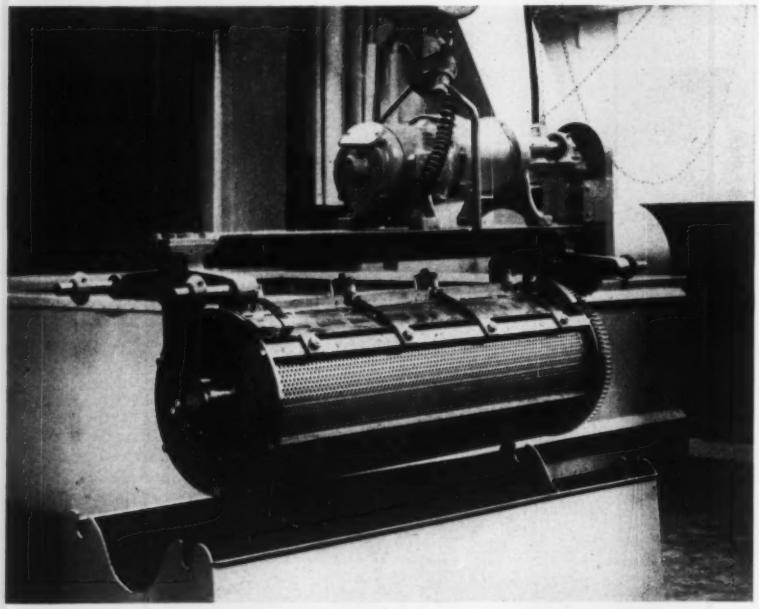
A double cone (57 in. OD) has been lifted out of the degreaser. The side of the polyvinylchloride hood shows at left. The crane control box (upper center) is directly beneath the stationary control

the first year of operation, it earned $191,545.44 in direct equipment and manhour savings—paying off the total investment, plus a bonus of over $4000.

In addition, production increased an estimated 300 per cent because a large amount of the work was not phosphated previously.

• **Benefits** — Until the system was installed, Timken couldn't phosphate its largest bearings — the equipment couldn't take the size. Mill bearings used to be carefully lubricated and packed for shipment. When they were to be stored for long periods at customer plants, they had to be unpacked and sub-

Here, the huge cone comes out of the last bath. The five coils of the stationary control box are visible overhead. From here, the crane will go automatically to the unloading area



This motorized revolving drum is used to phosphate smaller parts in large numbers. The stand stores the fixture and is on wheels to facilitate moving it around the department

merged in oil. Phosphated bearings can be stored for longer periods in their original packing.

Since the new facilities were designed to handle present and anticipated demand, they were operating at only partial capacity on mill bearings; engineers decided to run smaller parts, too.

S. A. Chojnowski and H. P. Whittaker Jr., Timken project engineers, tell STEEL that on small products, two men now do in 1½ shifts what used to take three shifts. In addition, many small parts, the big mill bearings, and all all-purpose bearings are run on the same line.

• **How It Works**—Each of the two cranes has a 5 ton capacity—they provide exceptional accuracy in the timing of bath cycles, say Messrs. Chojnowski and Whittaker.

The cranes are mounted on an overhead track that forms an oval 13 ft wide and 60 ft long. Riding immediately in front of each power hoist is a rectangular control box. At five locations on the monorail (above each processing tank) are stationary control boxes that can receive or send radio frequencies.

When the receiving head of the crane control is directly beneath one of the stationary control boxes on the monorail (there's about a 2 in. gap), messages flow to and from the central control panel and crane controls via the permanent stations on the monorail. The central panel is tied into the stations on the monorail by coaxial cables.

At a sixth location on the monorail is a wait station with a control box that can only receive signals.

• **Phosphate Equipment** — Five tanks (some stainless steel and some black iron) are arranged in a single row to complete the phosphating line. Set in a concrete pit which is 3 to 9 ft deep, the tanks project about 3½ ft above the floor. Each tank has a capacity of 3400 gallons. Some are filled manually; others have float controls since they are cleaned only about once a year.

A unit for the phosphate vat automatically keeps concentration of solution constant by adding soft water and chemicals in the correct mixture. A system of pipes and pumps empties the tanks to a spare container outside the building when

cleaning becomes necessary.

The last four tanks in the line are covered by a polyvinylchloride hood. The hood prevents poisonous vapors from escaping into the work areas. The entrance, exit, and slot across the top of the hood are closed by an air curtain. Air exhausted from the hood is cleaned, washed, and neutralized of any acid. Part of the air is recirculated; part is released and replaced with fresh air.

The air recirculating system is directly over the hood. Two of the air washers handle 12,500 cfm—a third handles 8000 cfm. The smaller one exhausts and the larger two recirculate air.

• **The Cycle**—The largest bearing that can be processed is 72 in. in diameter, 60 in. high. The disassembled bearing is loaded on a fixture at the loading station. (The crane is operated during loading by hand controls.) The fixture is picked up and the crane moved to the starting point, the wait station.

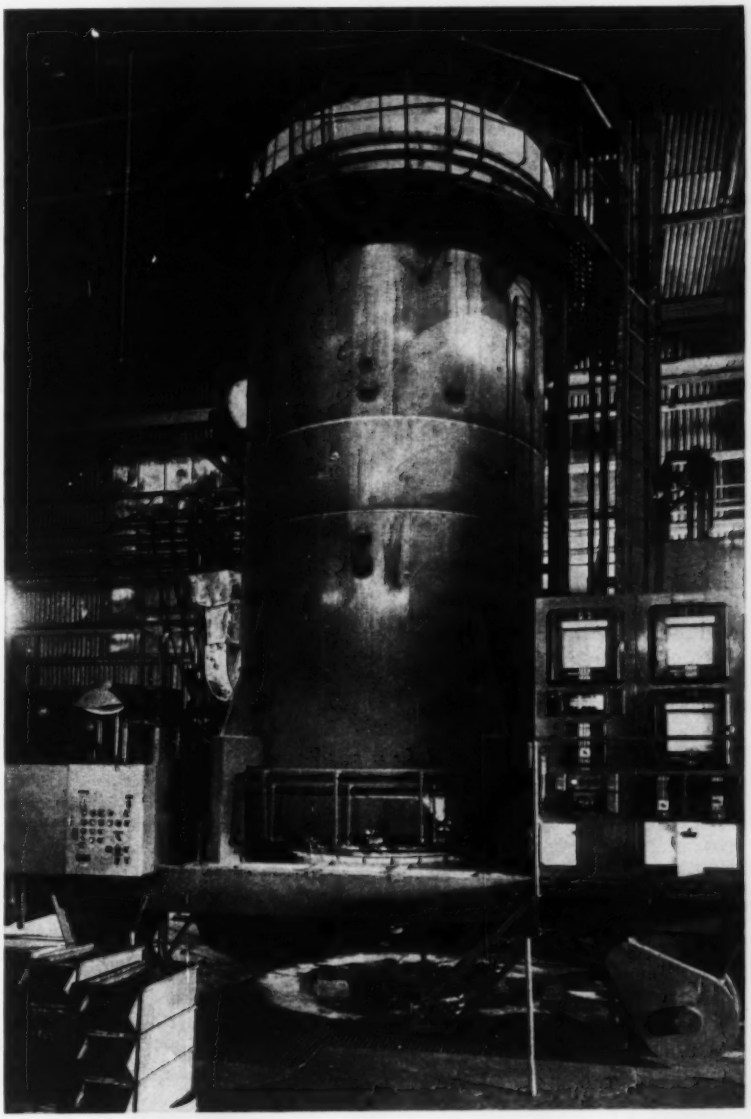
When the first three tanks are clear, the central control panel relays a signal to the crane and it moves forward. When it is directly over the vapor degreaser, a limit switch stops the crane. A 21 second pause provides time for the pendulum motion of the load to stop; then the bearing parts are lowered into the degreaser where they remain for 10 minutes. The degreaser removes oil, grease, or loose dirt from the bearing surface. Twenty-five seconds are spent lifting the parts, and another 18 second delay lets the excess solution drip back into the tank.

The next four baths follow the same basic steps, but the time cycles and bath solutions vary. A hot water rinse follows the degreaser to neutralize solution remaining on the parts. The third tank contains the phosphate solution where parts are submerged for 20 minutes. When the crane lifts the parts from this solution and moves them over the next tank, the central panel signals the next crane to start the sequence. A 1 minute hot water rinse follows phosphating. The last tank is for a hot soluble oil rinse. The last bath provides for in-plant rust prevention.

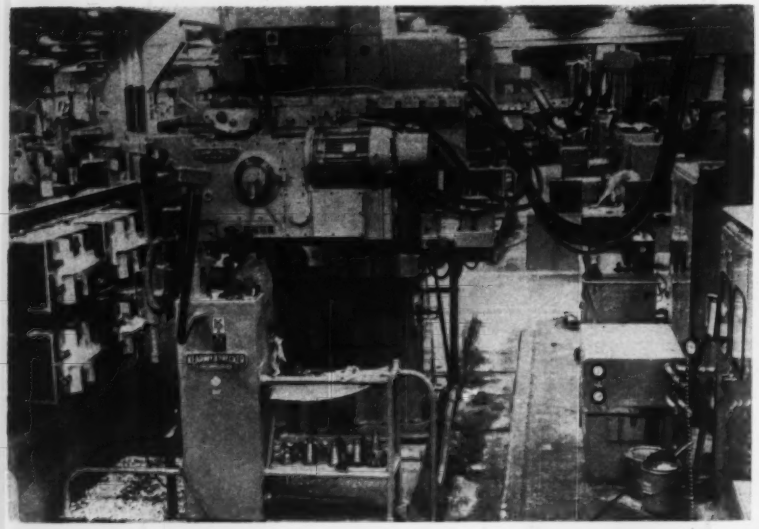
When the bath cycle is completed, the crane travels to the unloading platform. The line now uses two cranes—more can be added.

• **Trouble Cures**—Contact safety switches on both cranes preclude the possibility of collision. Trouble that crops up during the bath cycles is indicated by a bell on the central control panel. Its source is pinpointed by a light on the panel.

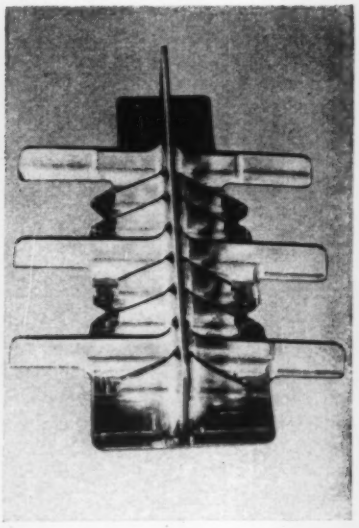
• **Small Parts**—The line is designed to handle large, mill type bearings, but smaller parts have also been provided for. A specially built drum attachment can be mounted on the crane and can be filled with small bearings. On the fixture, a motor is connected through a Reelite power line with watertight connectors. The motor, mounted above the drum, revolves it at 4 rpm. The motor automatically starts when the crane is on automatic control, stops when control reverts to manual.



THIS VERTICAL HEAT TREATING FURNACE at the Cal-Doran Heat Treating Co., Los Angeles, is used with a cold treating unit to process stainless steels requiring special treatment. Some of the alloys for aircraft and missiles, such as AM-350 by Allegheny Ludlum Steel Corp., can be hardened by heat treating or extreme cold (−108° F). The furnace permits heat treatment of parts up to 55 in. in diameter, 16 ft long, in any desired atmosphere



Guided by a Bendix three-axis numerical control system, this machine pays off on parts like those shown at right



On this kind of aluminum forging, numerical control cut 478 hours off tooling time and slashed machining time 55 per cent

Leadtime and Part Cost Slashed by Tape Control

Reduced tooling time for a new job is the major source of savings, reports aircraftmaker. In one instance, leadtime was cut from five days to one day

AT Boeing Airplane Co., Wichita, Kans., production men are proving that numerical control can be a shortcut to machined parts. The company has one of the world's largest installations of numerically controlled machines (STEEL, Dec. 8, 1958, p. 108).

Boeing has many examples of savings.

• **Example**—Take the case of a reinforcing doubler, a complex part that requires a lot of contour milling. The aluminum part is machined on a Kearney & Trecker profile milling machine, guided by a Bendix tape control system.

With conventional tooling and machining methods, leadtime was five days. With numerical control, it's only one day. It used to take 25 hours to machine the first part —6 hours a part in production. Now it takes 1.2 hours for the first part— 30 minutes a part in production. Savings: An 80 per cent cut in leadtime, a 90 per cent saving in machining time, and the time for hand finishing the machined part has been cut from 2 hours to only 10 minutes.

• **Example** — Another aluminum part, a forged fitting, requires a series of pocket milling operations. Numerical control lopped 1004 hours off the old time of 3495 hours required for tooling and setup. It also reduced machining time from 11 to 7 hours a part.

On this forging, the roughing cuts are taken at 1800 rpm; the spindle is speeded up to 2645 rpm for the finish cuts.

Offers Hard Facing Alloy

A hard facing alloy that machines readily but wears up to six times as long as conventional die materials has been introduced by Crucible Steel Co. of America, Pittsburgh. It's for tool and die applications.

The alloy, called Rexweld 66, contains nickel, chromium, molybdenum, and tungsten. It is highly resistant to thermal shock, impact, and compressive loads at high temperatures. Crucible says it will not chip, even in the hardest use.

Available in rods with a special low hydrogen coating, the alloy can be used to weld tool and die steels in any position, without cracks or porosity.

In drop hammer forging dies, the alloy is expected to outperform other hard facing materials.

Welding deposits can be machined readily, and finishing problems encountered with other hard facing alloys are avoided. It means that complex cavities and shapes, involving intricate finishing, can now be hard faced.

Saw Spurs Use of Structural Tubing

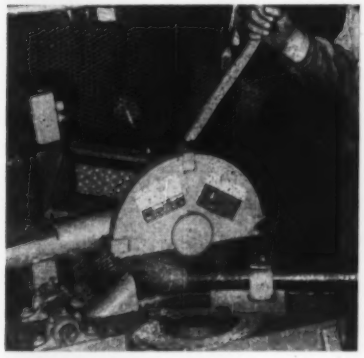
Joint prepared in fraction of time needed for conventional cut; easier welding claimed

YOU'LL probably see more structural use of pipe and tubing. A new machine, developed by the Wallace Supplies Mfg. Co., Chicago, may be a major factor in the trend.

Basically, the machine is an abrasive wheel saw with a patented work holding device.

It prepares 6 in. tubing joints for welding in 4 minutes; close fit of the joints reduces welding time required.

• **Chart Gives Settings**—The operator locks tubing in place and, using a chart supplied with the machine, makes three adjustments to get the right cuts. The chart gives exact settings based on the size of the tubing and the angle of the joint.



ABRASIVE SAW
. . . makes precision tubing joints

Previously, a template had to be made and drawn on the pipe or tubing before cutting, which was done with a torch. It took 20 to 30 minutes to prepare a 6 in. tube end, vs. 4 minutes with the Wallace machine.

Excellent fit of the joints and the smooth finish of the cuts could reduce welding time by as much as 30 per cent.

Saws are available in appropriate sizes for use with large or small structural tubing.

Rotors are made six at a time by diecasting molten aluminum around laminations

Cutting Diecasting Costs

Company reports that use of special steel for dies increases tool life, assures precision parts; shutdowns are fewer; machines and manhours are used more efficiently

IF YOU'RE spending too much time and money for tooling in your diecasting operation, you may be using the wrong die material. A conference with a supplier may pay off handsomely.

The importance of using the right material for casting dies was illustrated at Arvin Industries Inc., Columbus, Ind.

Die life can be increased many times by making dies of special tool steel.

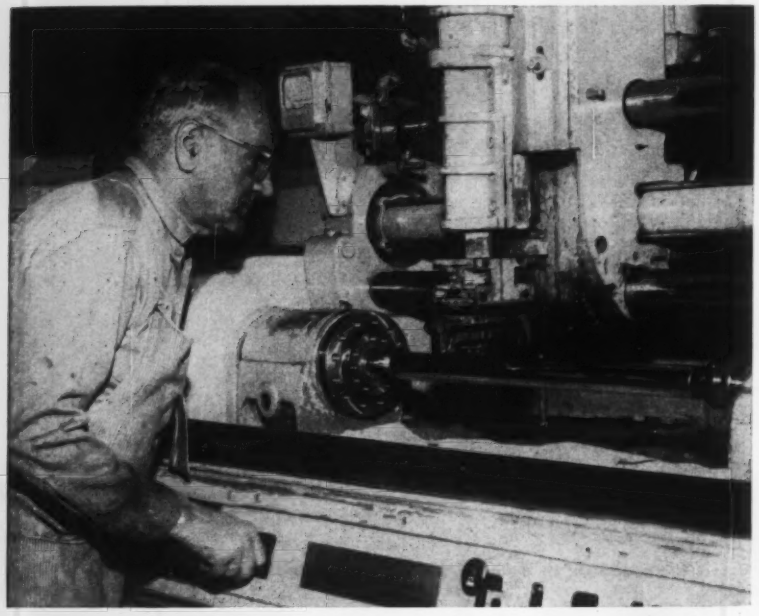
• **High Tooling Cost**—Arvin makes rotors for fan motors in electric heaters by diecasting molten aluminum centrifugally around the rotor laminations, after the shafts have been inserted.

After being used for about 12 hours, dies were badly worn and couldn't produce acceptable rotors. Two men were kept busy making dies.

• **Change Suggested** — Engineers from Allegheny Ludlum Steel Corp. suggested a change in the die material. They recommended dies made of Potomac M, a tough tool steel that contains 5 per cent chromium and 1 per cent vanadium. It resists wear at high temperatures.

For die inserts, which shape the rotor ends, they suggested L-XX (T-1), a high speed steel that resists tempering and produces sharp detail on long production runs.

Arvin's new dies and inserts have served more than two years without failure.



An operator watches the Superfinish cycle on a solid carbide roll. He generates an 8 microinch finish on roughing rolls, a 1 microinch finish on the finishing rolls. Cycle time: 32 minutes on this part

Unit Lops 24 Hours Off Job

New machine for finishing solid carbide rolls replaces four hand lapping operations. It also eliminates $8000 worth of grinding wheels, company reports

ONE WAY to take a whopping slice out of your production costs is to find a new process that will completely eliminate some operations, say machine tool builders.

• **Benefits** — At Wallingford Steel Co., Wallingford, Conn., production men have whacked 24 hours from the job of grinding and finishing solid carbide rolls by substituting a different machining method for tedious hand lapping.

In addition, the company has eliminated $8000 worth of grinding wheels for the job.

• **Old Way** — Used for rolling stainless steel strip and special alloys, the rolls must have an ultrasmooth finish to produce a highly reflective finished product.

Workmen formerly did the grinding with 600, 1500, and 2000 grit wheels. Four lapping passes (6 hours a pass) followed. Grinding time: 80 minutes.

• **New Way** — The company installed a Gisholt 52-A Superfinisher with a special high speed oscillating head. Now, only the 600-grit wheel is needed for grinding before the rolls come to the Superfinisher —and all four lapping passes have been eliminated.

Powder Aids Cutting

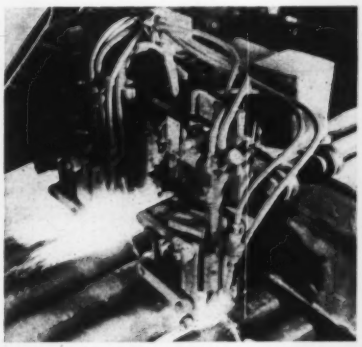
Metal powder in torch flame makes cutoffs faster, cleaner, prevents cracks and distortion

LOOKING for a faster way to cut metal without cracking or distortion? Try adding metal powder to the cutting torch flame.

The technique is being used to cut billets (mild steel or 6 per cent chrome alloy) into the right lengths for the seamless tubing mill at Pittsburgh Steel Co., Allenport, Pa.

More than 1000 billets 3½ to 7½ in. in diameter are cut off every 8 hour shift. A flame cutting machine is used. Cuts are clean and require no finishing.

Service engineers of Linde Co., a division of Union Carbide Corp., New York, co-operated with Pittsburgh Steel in the design and construction of the machine.



POWDERED FLAME
. . . makes faster, cleaner cuts

• **Automatic Operation** — Two Linde Oxweld cutting torches, with powder cutting attachments, are mounted on a machine carriage that controls cutting speed automatically. Cams, riding on the billets, raise and lower torches to follow the round surfaces.

A pneumatic dispenser feeds iron powder into the cutting flame.

The operator, using pushbutton controls, can raise or lower the track for billets of different sizes, position the torches at any point in their cycle, and restart cuts.

• **Shears Distorted Billets** — The machine cuts faster than shears, and doesn't distort billet ends. Shears made cracks in hard steel that showed up as open seams in tubing.

Bridgeport Ultra Fine Grain Brass puts more allure in a lure ...and more profit in your product!

Clear, polished or painted, "Dardevle" fishing lures, made by Lou J. Eppinger Mfg. Co., Detroit, Mich., are world famous for their deadly, sure-fire allure.

There's more than one reason for this magic appeal. But to designers and production men, the most important is the Bridgeport Ultra Fine Grain Brass from which the lures are made. This ductile, easily formed brass provides superior surface properties which help cut finishing costs to the bone.

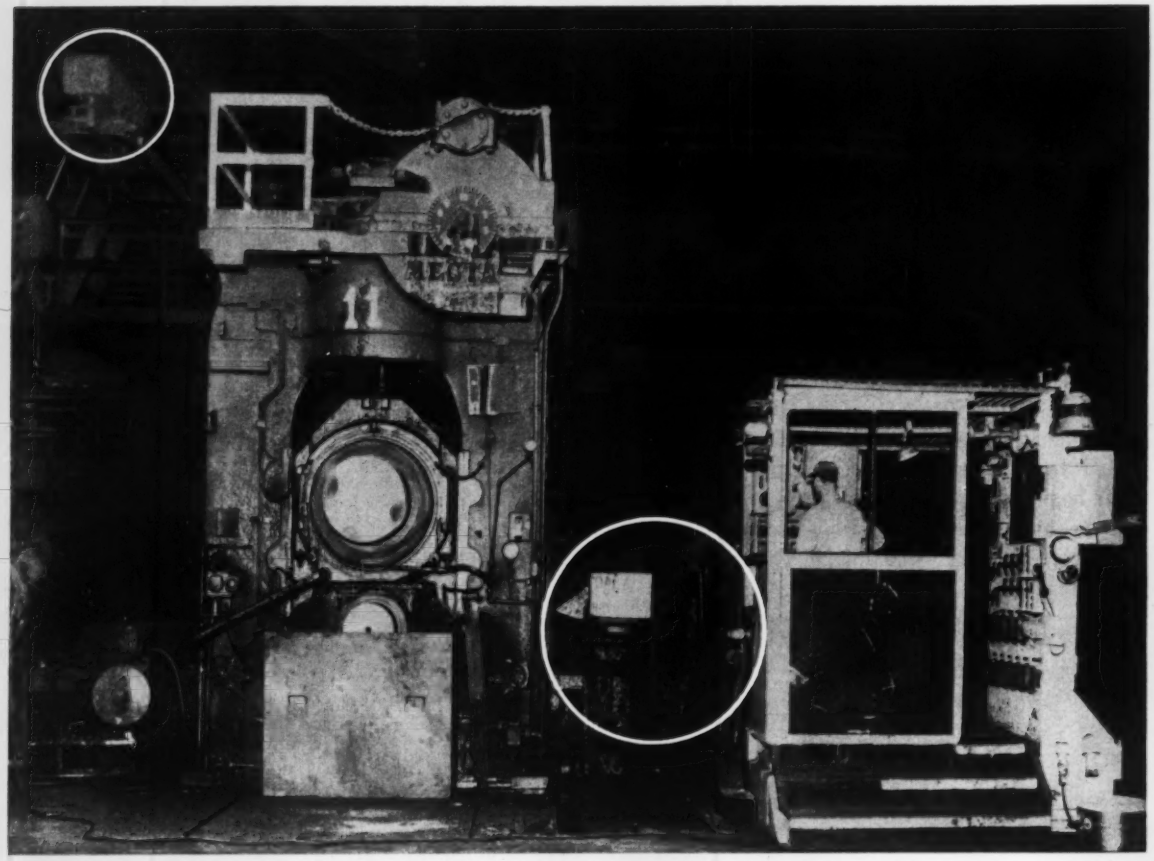
In Eppinger's case, for instance, some of the lures are clear polished and lacquered. Others are hand-painted. Ordinarily, these two different operations would call for two different types of metal. But, by using Bridgeport Ultra Fine Grain Brass, the same material can be used for either finish, an important purchasing saving.

If you're fishing for ideas on how to reduce your strip metal finishing costs, cast a line in Bridgeport's direction. Call your nearby Bridgeport Sales Office . . . or write direct for a copy of our Ultra Fine Grain Brass booklet, GRAIN SIZE, THE FOURTH DIMENSION. Dept. 0000.

BRIDGEPORT BRASS COMPANY

Bridgeport 2, Connecticut • Sales Offices in Principal Cities

Specialists in Metals from **A***luminum to* **Z***irconium*



Infrared width gage (upper left) and x-ray thickness gage (between pulpit and finishing stand) help prevent side scrap and overweight coils at hot-strip mill

Hot Strip Yield Boosted By Noncontact Gages

Infrared and x-ray instruments give continuous control of dimensions; loss of tonnage, on steel strip that's thicker or wider than specified, cut dramatically

YOU CAN slash tonnage losses in a strip mill by installing modern measuring instruments to reduce side scrap and overweight coils.

A big eastern steel producer claims annual savings of over $3 million through the use of noncontact gages to control the width and thickness of hot-rolled strip products. Gages were made by the Industrial Gauges Dept., Daystrom-Weston Industrial Div., Daystrom Inc., West Englewood, N. J.

Engineers at the strip mill estimate that the width of side scrap averages 1/8 in. less than when measuring was done with a steel tape.

• **Three Gage Systems**—Continuous measurement and control of width and thickness is provided by three gage systems: A width gage, a thickness gage, and a thickness control gage.

The width gage, which includes an infrared radiation device, indicates deviations from a given dimension. With readings available at all times, operators at the finishing stands can telegraph the roughing stands for correction of width variations, caused by incorrect edge roll settings or slab characteristics.

The thickness gage provides a controlled, variable source of x-ray energy. Absorption of the radiation by the steel is electronically translated into strip thickness and deviation from preset limits.

The thickness control gage limits

NOW - A NEW "*Push Button*" FLYING SHEAR

NO DOWN TIME to change cut length or synchronization

A HALLDEN SHEAR EXCLUSIVE

A major improvement in high production continuous strip process in-line shearing.

Revolutionary new designs now permit synchronization adjustment AND gear changes to be made without stopping production. Changes in cut lengths are made in just seconds.

Hallden Shears can be furnished in processing lines built by leading machinery manufacturers the world around.

DESIGNED AND BUILT BY

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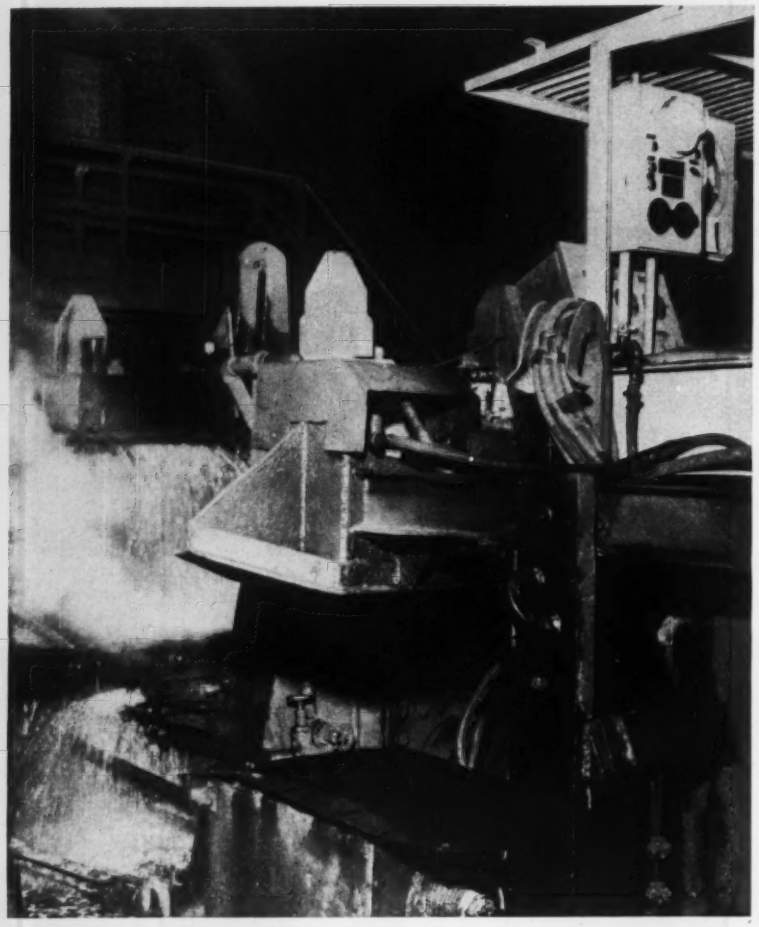
THE SHEARING SPECIALISTS

THE HALLDEN MACHINE COMPANY • THOMASTON, CONNECTICUT

Associates: The W H A Robertson & Co Ltd Bedford England



Thickness gage, controlled from the pulpit, is rolled away from the mill bed for inspection and maintenance; water spray at the end of the stand reduces gage fluctuations caused by clouds of red oxide from the hot steel

deviation of hot-strip thickness by electronic control of the mill's roll screwdown motors.

It is operated by signals from the thickness gage.

Chart records from the width and thickness gages serve as checkpoints if later trimming is necessary. The charts are often used in the shipping department for inventory data.

They also are frequently used for rechecking outbound coils.

• **Reliability Plus** — Operators report few problems in using the width and thickness gages. They're 98 per cent reliable.

Hot-strip speeds (up to 2200 fpm) and sudden speed changes do not affect the accuracy of the gages.

Most rolling is done at 1300 to 1700° F. Maximum operating temperature recommended by Industrial Gauges is 2000° F, but mill operators claim the gages work better at higher temperatures. They say radiation reflected to the receiving units is intensified and picked up more readily.

Lowest recommended operating temperature is 900° F, but mill experience dictates a minimum of 1000.

Red oxide and splashing water from the cooling system reduce reliability of gage readings below that temperature.

Interference from clouds of red oxide (formed from the rolling strip) and cooling water can't be entirely eliminated, but special water jets, installed at the end of the finishing stands, minimize the oxide factor.

Air and steam jets along the rolling strip bed help control fluctuations in chart recordings caused by water splashes.

• **Few Maintenance Problems** — Maintenance cost is low. A weekly calibration check is made, but adjustments are seldom necessary. A monthly check of the equipment may reveal one or two defective vacuum tubes. Tubes are normally good for 1000 operating hours, but mill cobbles, water leaks, or other damage may shorten their life.

• **Old Method Wasted Steel**—Previously, the mill used steel tapes and micrometers to measure width and thickness of hot strip. It was necessary to overallow on dimensional tolerances; that made for excessive scrap or overweight in orders.

Also, as many as three slabs were run off before width corrections could be made.

Steel tapes are still used for final checks, especially if gage readings are questioned. In such cases, mill hands roll out the coil and check the gages with 12 or more tape readings.

Mylar Slings for Hoists Are Strong And Safe

Load slings made of Mylar rope help cut costs and reduce plant accidents at Insul-8 Corp., San Carlos, Calif.

The company has completed a two year, constant use test.

The slings are easy to use because they don't kink or set; they're used to haul plastic and steel coil stock that must be protected from scratches.

Another advantage: Workmen do not cut or scratch their hands on broken strands.

Mylar film is formed into a fine yarn and made into rope that doesn't become brittle or discolored, even in direct sunlight.

It's available in standard sizes, $\frac{1}{8}$ to $\frac{7}{8}$ in.

Other advantages claimed by the manufacturer, U. S. Plastic Rope Inc., Redwood City, Calif.: Good dielectric properties permit the slings to be used near power lines without danger of shorting; the rope can be used in chemical plants because it's impervious to acids and other corrosive substances.

16 Ton "Gas Mask" for a Blast Furnace

Diversity in the production of steel castings is routine in the foundries of Erie Forge & Steel Corporation. For example, this cast steel blast furnace bell.

The 16 ton lower bell casting teams up with the one ton cast steel upper bell to distribute solids to the blast furnace without loss of gasses . . . a job which requires high quality steel of accurate as-cast dimensions.

From the beginning of the steelmaking process the raw materials are tested at frequent intervals to assure the quality of the steel . . . careful metallurgical and engineering control from scrap pile to finished casting. This is standard operating procedure at Erie Forge & Steel in the manufacture of steel castings and forgings which meet the widely diverse demands of industry . . . another of the many reasons your Casting and Forging requirements are in competent hands here. Consult with us.

ERIE FORGE & STEEL CORPORATION

ERIE, PENNSYLVANIA

MEMBER AMERICAN IRON AND STEEL INSTITUTE

'Two Alloy Steels' Plan Avoids Mix-Ups, Cuts Costs

One through hardening grade and one casehardening grade will do 80 per cent of the jobs that alloy steels are specified for. Standardization brings big savings

IF YOU USE many grades of alloy steel in your manufacturing operations, you have an excellent opportunity to pare costs. Chances are, two alloy steels will meet 80 per cent of your requirements.

You'll save inventory costs. You'll also save through the elimination of tight manufacturing controls which are necessary to avoid mix-ups in materials. Different grades of alloy steel require different heat treating procedures and machining setups.

Under International Nickel Co.'s "Two Alloy Steels" plan, you will use AISI 4340, a nickel-chromium-molybdenum steel, for parts that have to be through hardened, and AISI 4615 or 4620, nickel-molybdenum steels, for parts that require casehardening.

• **Alloy Steel Advantages**—The requirements of strength, toughness, and durability in machinery and equipment demand the use of alloy steels. Although a ¼ in. round bar of carbon steel can develop as high an ultimate strength as an alloy steel in that size range, other considerations give alloy steel the nod.

Alloy steels have greater hardenability. That property permits a uniformly higher hardness and strength in heavier sections and the use of a milder quench for hardening smaller sections. Alloy steels will show less tendency to warp or crack during heat treatment.

They will be much tougher and can be treated to higher tensile properties without sacrifice of shock resistance or ductility than can carbon steels of the same carbon content or hardness. The higher strength-weight ratios permit economies in weight and volume of steel used.

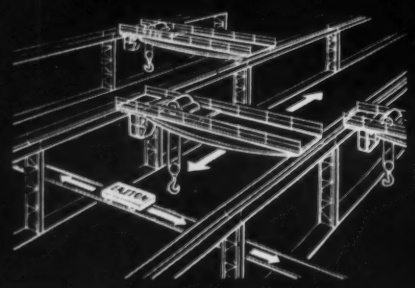
• **Sections Often Vary**—Most finished parts have cross sections of varying thickness. If carbon steel is used, different size sections will develop different properties. Alloy steels will develop uniform properties through the part, in thick and thin sections.

Alloy steels also have unique advantages. Example: Nickel alloys show resistance to low temperature embrittlement.

• **AISI 4340 Steel** — This nickel-

CROSS-BAY® TRANSFER CARS

ELECTRIC, DIESEL-ELECTRIC, GAS-ELECTRIC,



EASTON Cross-Bay* Transfer Cars

supplement the service of overhead cranes in multiple-bay plants by providing low-cost handling across the bays and between plant buildings. Also available with custom-designed superstructure for specialized handling operations.

Branch Offices or Representatives:

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A-1064

chromium-molybdenum steel has been preferred by manufacturers who need the ultimate in properties for a quenched and tempered part. The best combination of strength, ductility, toughness, and fatigue resistance is obtained when a steel is thoroughly hardened and adequately tempered.

In its ability to harden throughout heavy sections, 4340 surpasses other steels of comparable cost and total alloy content, says International Nickel.

It is machinable at hardness up to 450 Brinell and weldable under proper conditions.

The 4340 alloy was the basis for superstrength steel (240,000 to 300,000 psi tensile). Other modifications of the composition have been used as tool and die steels, for some moderately elevated temperature applications and military items.

It is carried in stock by a large number of steel service centers in the quenched and tempered condition for manufacturers who produce high strength parts but want to avoid the expense of heat treatment.

• **AISI 4615-4620**—These two steels have good hardenability, so the cores of casehardened parts develop ample strength. Generally, the lower carbon grade, 4615, is best for light sectioned parts, and 4620 for parts of greater thickness.

Large and intricate parts can be oil quenched without fear of soft spots in the case.

Their greatest advantage is the ability to resist warpage and distortion during heat treatment. The high dimensional stability of the 4600 steels has extended the size and shape of parts that can be carburized well beyond the old limits which were based on the feasibility of corrective grinding after heat treatment.

These steels are not subject to embrittlement due to carbides, or to soft surfaces. That means that many different varieties of parts can be processed using simple carburizing procedures. It allows the treatment of mixed furnace loads, effecting considerable savings in heat treatment costs.

An increasing number of steel service centers are carrying the 4340 and 4615-20 steels. International Nickel offers a booklet listing those sources.

New Tool Steel Has Good Machinability

LOWER costs, less risk, and better dies are the advantages claimed for a new cold work tool die steel developed by Universal-Cyclops Steel Corp., Bridgeville, Pa.

Called Lo-Air, the tool steel features: 1. High hardenability. 2. Heat treating from low temperatures. 3. Minimum distortion. 4. Good machinability.

The material is designed for use in blanking, forming, coining, and trimming dies, as well as for shear blades, spindles, mandrels, stripper plates, and other applications.

An AISI Type A6 steel, it contains 2 per cent manganese, 1.35 molybdenum, 1 chromium, with a carbon level of 0.70. The tool steel can be hardened to Rockwell C63 and then tempered to get the best combination of hardness and toughness.

CAPACITIES • 25 TO 650 TONS

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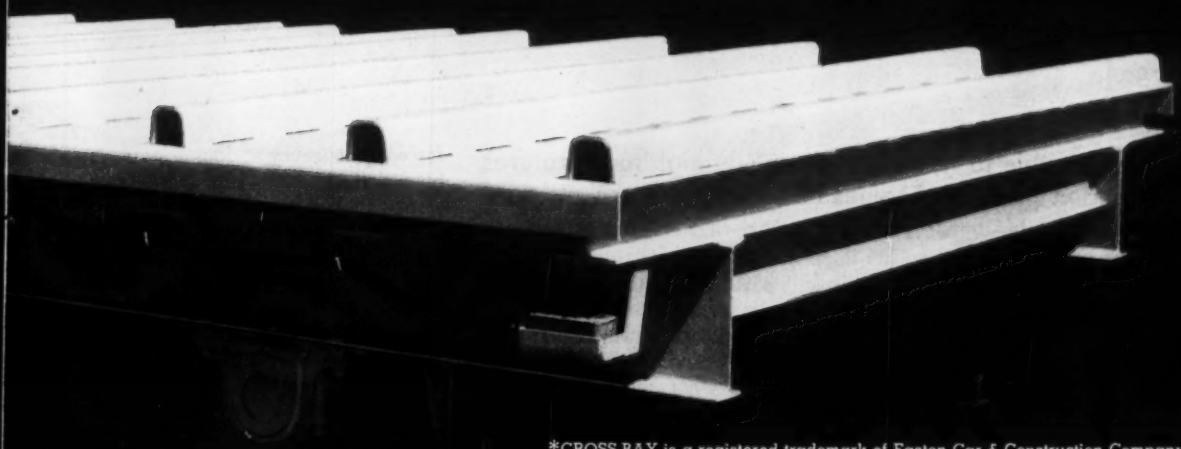

*CROSS-BAY is a registered trademark of Easton Car & Construction Company

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Three Solutions for High Temperatures

1. Heat Sink

Build a structure large enough to absorb enough heat to prevent failure. Such devices are too heavy for ballistic missiles.

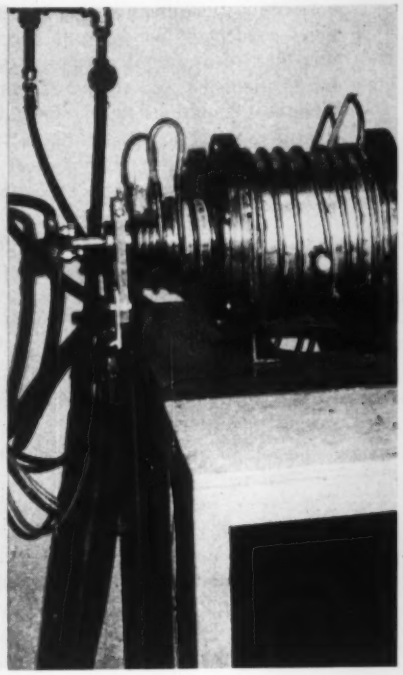
2. Sandwich

Start with a high strength, temperature sensitive metal. Cover it with a layer of insulation and a layer of low strength, highly conductive material to resist erosion.

3. Temperature Resistant Structure

Build the whole thing of refractory materials.

Since the exposure to high temperatures is short, creep isn't serious unless materials are operating close to their melting points. Similarly, fatigue and oxidation are of little concern because operating life is short and there is little oxygen in the upper atmosphere. Even molybdenum can be used without protection.



Ceramic engineers form metallic carbides in this high temperature

We Need Better Materials

They must be able to withstand extremely high temperatures over extended periods. Engines of solid fueled rockets generate 5000° F. New fuels being tested are even hotter

PROGRESS in solid fueled rockets is being held back by a lack of materials that will withstand high temperatures for prolonged periods, says A. S. Neiman, metallurgist, Stanford Research Institute, Menlo Park, Calif.

The problem: Today's solid fuels heat critical areas of rocket engines to temperatures above 5000° F. (New fuels which are about ready for introduction are still hotter.) Current materials will stand the gaff for about 2 minutes, but a practical material that will withstand even 3500° F continuously seems five years away.

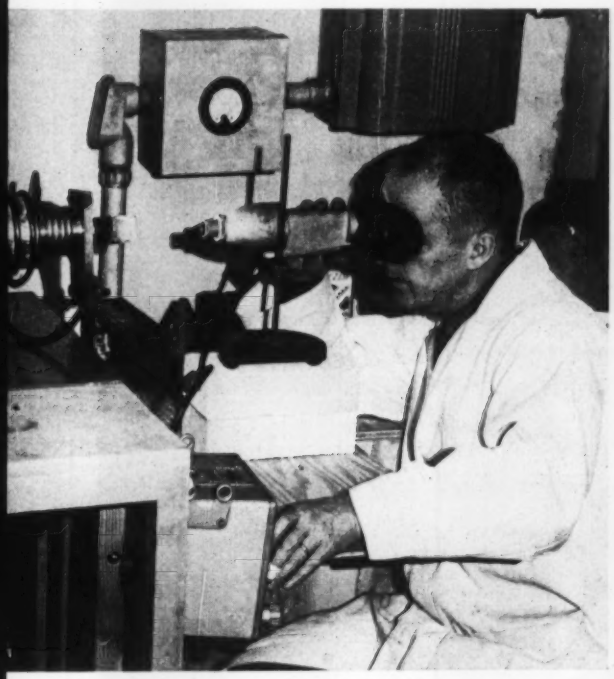
Pushing temperatures higher calls for a whole new class of materials to replace what most people call high temperature metals. Cobalt and nickel-base alloys, for example, won't operate over 2000° F.

Engineers and researchers are probing the possibilities of four general classes of materials: Plastics, graphites, ceramics, and refractory metals.

• **Plastics** — Thermosetting reinforced plastics have found a place in rocket engine design. Phenolic resins (possibly others) reinforced with glass, asbestos, or quartz will take 6000° F for 2 minutes.

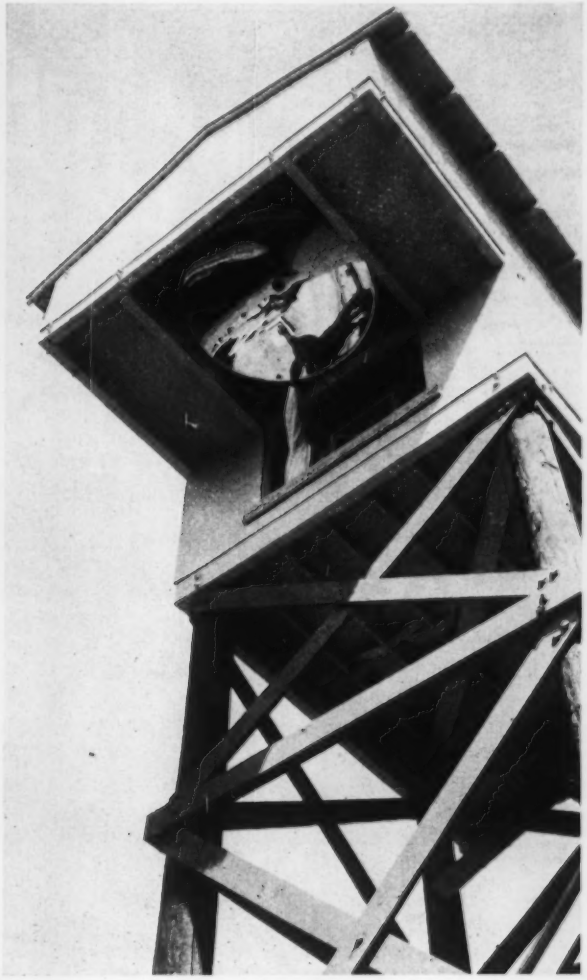
Plastics can survive because of a built-in sweat-cooling effect. The organic compounds boil out until only carbon is left. The residue maintains structural integrity.

• **Graphites** — For years, graphite has been the standard nozzle material for solid rockets because it's light, resists thermal shock and erosion, costs little, and machines easily. It is twice as strong at 5000° F than it is at room temperature. Oxidation is no great problem if the rocket exhaust gases do not con-



graphite-resistant furnace. The object: To find carbon-based materials with improved oxidation resistance

for Rockets



Solar furnaces aid the measurement of thermal properties. To study shock, a chilled specimen placed on the target plate can be exposed instantly to 10,000° F

tain too much oxygen and exposure is short.

• **Ceramics**—Solid ceramics such as silicon-nitride-bonded silicon carbide, silicon carbide, beryllium oxide, and zirconium carbide have been used for nozzles and direction control devices with varying success. Careful design is necessary to prevent heat cracking.

Ceramics are limited by brittleness, but research may develop a material with temperature resistance to 7800° F, high strength, and low density.

Thin ceramic coatings, such as aluminum oxide, zirconium oxide, and zirconium silicate, resist spalling and make good erosion shields.

• **Refractory Metals**—Molybdenum, tantalum, and tungsten are suitable for rocket engines despite their high density and poor oxidation resistance. A thin layer can be an excellent erosion barrier up to the melting point of the metal. The metals can also be used for structural members (but stress-to-rupture data are badly needed).

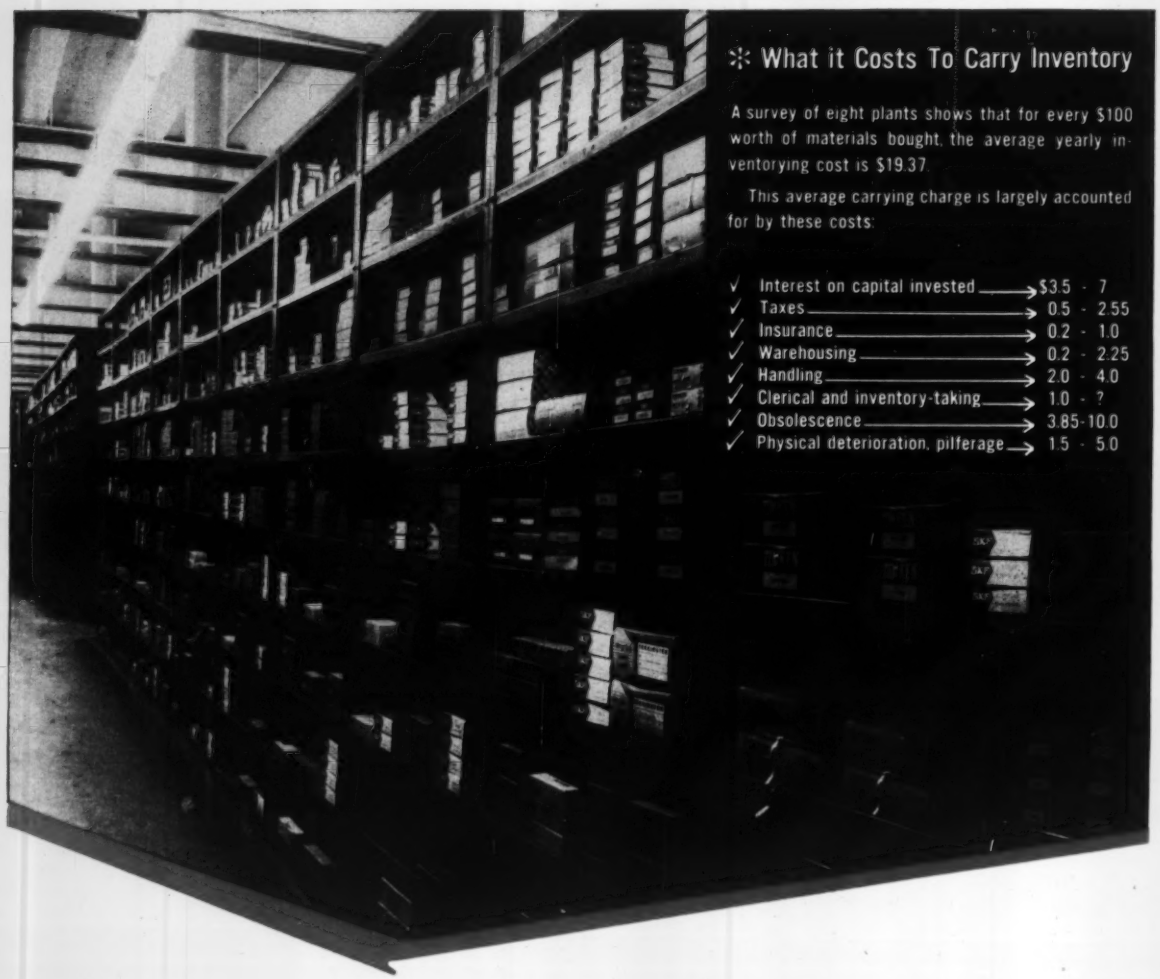
Tantalum is promising because of its high melting point. It fabricates easily, and has a relatively low oxidation rate, compared with molybdenum and tungsten.

Tungsten has been spray coated on many materials and also seems to be promising for fabrication by slip casting.

Molybdenum should be useful for structural members which operate at temperatures under 4000° F.

Tantalum and columbium become brittle at room temperature after high temperature oxidation. But that is no problem because rocket engine parts are heated only once and operate while hot.

Commercial titanium - carbide nickel, alumina - chrome - tungsten, and tungsten carbide-cobalt cermets do not seem to have high enough melting temperatures to resist the erosion of today's high-energy propellents. More work is warranted since refractory metal structural components may be lightened and strengthened by additions of ceramics.



✻ What it Costs To Carry Inventory

A survey of eight plants shows that for every $100 worth of materials bought, the average yearly inventorying cost is $19.37.

This average carrying charge is largely accounted for by these costs:

✓ Interest on capital invested	$3.5 - 7
✓ Taxes	0.5 - 2.55
✓ Insurance	0.2 - 1.0
✓ Warehousing	0.2 - 2.25
✓ Handling	2.0 - 4.0
✓ Clerical and inventory-taking	1.0 - ?
✓ Obsolescence	3.85-10.0
✓ Physical deterioration, pilferage	1.5 - 5.0

Bearings, Inc. can cut your costs on bearing inventory . . . 2 ways!

Inventory costs soak up a lot of dollars that could do much more for your company in other ways. We now perform inventory cost-cutting services for many of our customers and are ready to do the same for you.

First, a bearing survey of the bearings used in the equipment in your plant. We convert manufacturers' parts numbers to bearing numbers. This survey usually shows many identical bearings being held in inventory for different equipment when only one or two bearings will satisfy your immediate needs. A complete record is made of all bearings you actually require and we keep this record up-to-date.

Second, you keep in inventory only a minimum number of bearings to take care of emergencies. Bearings, Inc. guarantees that the branch nearest your plant will stock all the bearings shown on your survey, ready for immediate delivery day or night!

Call or write for a Bearings, Inc. sales engineer to discuss this important, money-saving program NOW! Check our branch locations for the one nearest you.

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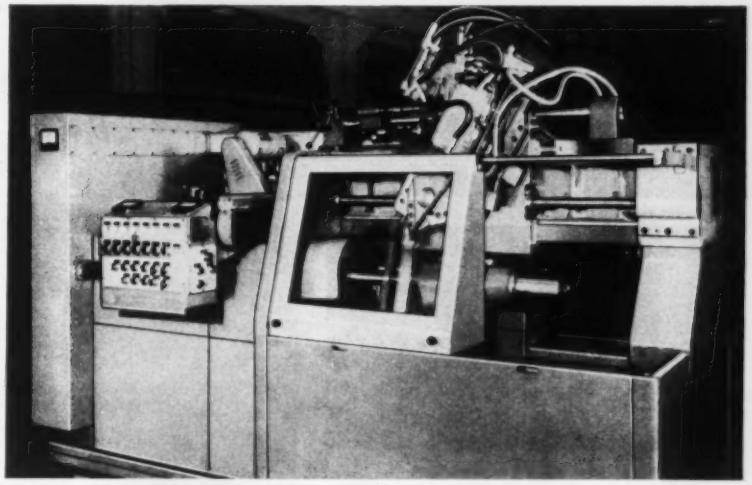
Component Choice Widens Tracer Lathe Utility

WITH the Model 30 tracer lathe, you choose the tracing unit, headstock, and rear slide to meet your turning requirements.

Two tracing units are available. One performs a single tracing cut in a fully automatic cycle. The other provides two fully automatic tracing cuts with an indexing toolholder. Both units provide feed change during a cut.

One of two headstocks may be selected. Both provide automatic speed shifts during a cut. One permits shifts between two speeds; the other allows automatic shifting between four selected speeds. You can choose rear slides for facing, forming, and turning.



Other machine features: Controls which can be programmed from the operator's station; stylus and templates placed high and dry, free from chips or coolants; large unobstructed area for manual or automatic loading and chip disposal.

General specifications: 23 in. diameter swing over rails; 13½ in. diameter swing over tracer slide. Work diameter is ½ in. minimum, 8 in. maximum. Center to center distance can be 24, 48, or 72 in.

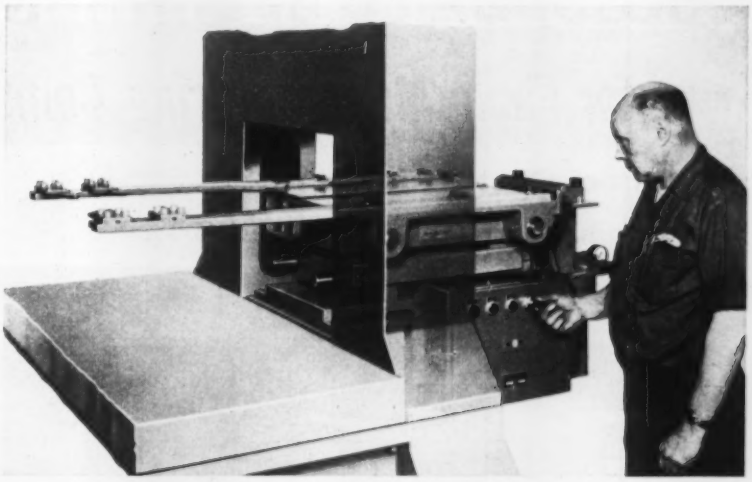
For more information, *write* Jones & Lamson Machine Co., Springfield 16, Vt.

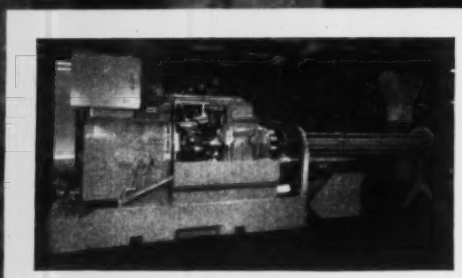
Transfer Feed Unit Makes Presses Automatic

THIS versatile automation unit converts any single-action press into a transfer feed machine. It will feed strip stock or parts into and out of the press die areas automatically. It can feed material between dies in a press or transfer and feed two or more presses in a line.

Called the Trans-Feed, the unit bolts on the press bolster plate and can be moved from one press to another to provide automation for job lot pressroom operations. Its cast aluminum construction reduces weight and inertia forces.

Air cyclinders operating through ball bearing linkages control all





Acme-Gridley, 1¼" RB 8 producing 690 nozzle bodies per hour

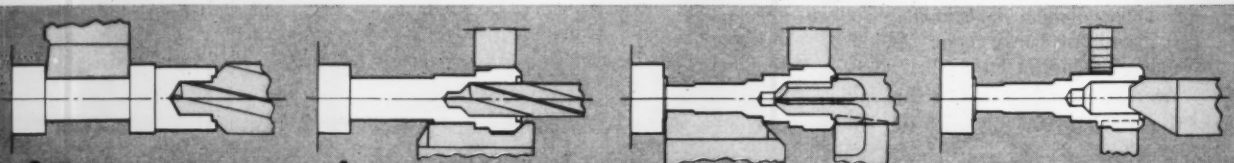
Close-up of tooling zone showing 5th, 6th and 7th positions.

ACME-GRIDLEY ELIMINATES SECONDARY OPERATIONS...

for Eagle Manufacturing Company

- Direct Cost Reduced 48%*
- Production Time Reduced 64%

* Details on request



8. Feed out—rough form rear diameter—counterbore and drill large hole part way

1. Form two front diameters and chamfer head—drill large hole remainder—support

2. Form two rear diameters—ream large hole—face end—support

3. Stop spindle rotation—mill flat—support

As a part of a continuing contribution to all phases of cost reduction, National Acme engineers initiated the development work necessary to effect important savings for this 65 year old Wellsburg, W. Virginia company.

The aluminum nozzle body of their hydraulic pump oilers formerly had been produced on a six spindle automatic and two other machines performing secondary operations. Visionary machine tool engineering made possible the application of spindle stopping and positioning on an eight-spindle Acme-Gridley to complete the entire piece *in the primary set-up . . . and increase net production.*

Advanced design and development such as this, together with wide open tooling zones, independently operated tool slides and the extreme accuracy and flexibility of direct camming . . . makes possible the solution of "unusual" jobs an "every day" occurrence at National Acme.

Write or ask one of our representatives for the complete story on the industry's most modern approach to *your* cost reduction problem.

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"ZONE OF RESPONSIBILITY"
INCLUDES ALL PHASES OF COST REDUCTION

Check YOURS...Then Check National Acme

Direct Costs: these include direct dollar savings as realized by the Eagle Manufacturing Company . . . an "every day" job for Acme-Gridleys.

Indirect Costs: effecting important savings in maintenance, downtime, scrap reduction, tool costs, etc.

Product Redesign: teaming with your design group to take full advantage of Acme-Gridleys' cost reducing capabilities.

Direct Material Costs: our engineers provide important savings in this area by constantly matching machines and tools to modern metallurgical problems.

Make-or-Buy Reviews: in many cases our Contract Division can assume your production headaches and relieve you of immediate capital investment.

Spot Modernization: pioneering in modern tooling methods, and the flexibility of Acme-Gridleys can provide many "on-the-spot" savings.

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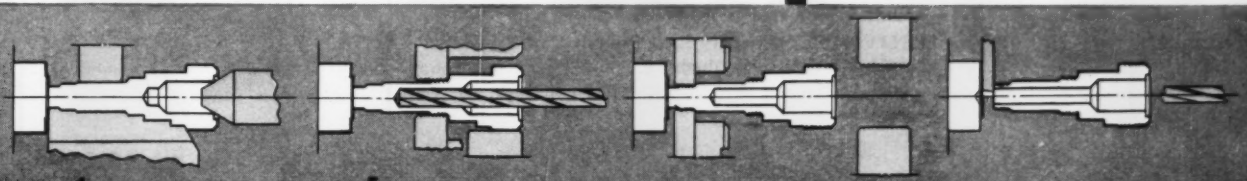
Pioneer in Circumferential Automation

15 Operations in 5.5 Seconds



4. Start spindle—shave all over—support

5. Roll center thread—drill small hole part way—support

6. Roll rear thread—thread head

7. Drill small hole remainder—cutoff

DURALOY

DURASPUN

RADIANT BURNER TUBE ASSEMBLY

HERE WE HAVE A COMBINATION OF

1...statically cast bends and reducers

2...centrifugally cast tubes

3...machining

4...welding

This is indicative of the high alloy casting work we turn out at Scottdale. We can produce static castings up to 6 tons and centrifugal castings up to 24 inches in diameter (OD) and up to 15 feet in length (depending upon the diameter). We have excellent machining facilities and men skilled in the welding of the chrome-nickel alloys.

Our metallurgists will be glad to recommend the proper alloy for the casting you need to combat corrosion, high temperature or abrasion or any combination of these three.

The DURALOY Company

OFFICE AND PLANT: Scottdale, Pa.

EASTERN OFFICE: 12 East 41st Street, New York 17, N. Y.

ATLANTA OFFICE: 76—4th Street, N.W.

CHICAGO OFFICE: 332 South Michigan Avenue

DETROIT OFFICE: 23906 Woodward Avenue, Pleasant Ridge, Mich.

movements. In a typical operating sequence, fingers on parallel horizontal arms move toward each other to grip the part. Next, the arms advance the part into the die or station. Then the part is released and the arms retract to start position.

Press controls can be tied in electrically with the Trans-Feed so the two will operate in sequence. For more information, *write* Press Automation Systems Inc., 25418 Ryan Rd., Warren, Mich.

System Lubricates Units

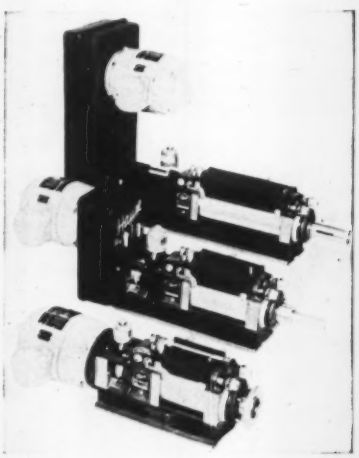
THE RAM-PUMP provides automatic or semiautomatic lubrication of bearings on single machine units while they operate.

It is simple to install, eliminates machine lubrication downtime, frees maintenance personnel, and cuts the number and quantity of lubricants used. Low and high pressure units are available. For more information *write* Lincoln Engineering Co., 5702-33 Natural Bridge Ave., St. Louis 20, Mo.

Drill Units Do Many Jobs

HERE are two machines you can get a lot of use out of: The drill units are self-contained, reciprocating, quill-type power devices for production drilling, reaming, centering, facing, and similar operations.

The Model 26 has a 6 in. stroke, and the Model 210 has a 10 in.



R. W. Creamer, V.P., checks x-ray films of tank welds.

Picture of a man saving $400 per unit

It's done with Kodak Industrial X-ray Film, Type AA

Creamer and Dunlap, Inc., make pressure vessels—big ones, 67 ft. long by 9 ft. in diameter. Because they radiograph every inch of every weld to determine soundness, they can use thinner plate. This results in about 10% less weight with attendant savings in fabrication, handling and shipping. Altogether it adds up to as much as $400 per unit.

What's more, radiography helps to assure customers of a high-quality, safe product.

This company switched to Kodak Industrial X-ray Film, Type AA, because, "This film," they say, "is faster and has superior contrast, definition and radiographic sensitivity."

Your x-ray dealer and the Kodak Technical Representative will gladly tell you how Kodak film can improve your radiographic operation and help you get more out of your present x-ray or gamma-ray equipment. It can pay you to get in touch with them.

Read what Kodak Industrial X-ray Film, Type AA, does for you:

- Speeds up radiographic examinations.
- Gives high subject contrast, increased detail and easy readability at all energy ranges.
- Provides excellent uniformity.
- Reduces the possibility of pressure desensitization under shop conditions.

EASTMAN KODAK COMPANY, *X-ray Division*, Rochester 4, N.Y.

For inspection of welds, Kodak Industrial X-ray Film, Types AA, M, and KK, are available in the 70mm by 550 ft. package, as well as in standard sheet sizes.

Kodak
TRADE MARK

A message to a leading

PROJECT ENGINEER

Would you consider a change—new climate, locale, living conditions — unique challenge, permanency and more than commensurate rewards?

A leading West Coast engineer-contractor is seeking a man of unusual skill and experience. He must have at least 10 years of progressive integrated steel plant development experience. He must know plant layout, construction design, and be of managerial caliber. He will be charged with the continued development of new steel plants and the expansion of existing plants in the U.S. and abroad. His salary will be more than generous.

This man and his family will enjoy indoor-outdoor living in the mild, smog-free San Francisco Bay Area. Here are fine new schools and famous Universities, the culture and sophistication of San Francisco, plus year around recreational opportunities ranging from sea to Sierra and including all sports.

This man will enjoy, too, life insurance, free family health plan, retirement, moving allowance and other perquisites.

Can you qualify? Are you interested? If so, why not write today in strictest confidence to:

Box 719
STEEL
Penton Bldg.
Cleveland 13, Ohio

NEW PRODUCTS and equipment

stroke. They can be used individually or in groups with manual or automatic cycling systems.

Compressed air provides stroke actuation and thrust; a sealed hydraulic system gives positive and adjustable control of the quill movements.

Six standard drives with ½ to 2 hp motors, developing spindle speeds of 200 to 8000 rpm, and six interchangeable spindles are available for both models. For more information, *write* Hause Machines Inc., 809 S. Pleasant, Montpelier, Ohio.

Vacuum Furnace Heats Work Up to 4000° F

POWDER metallurgy parts compacted from materials with high melting points (such as tantalum) can be sintered in a cold wall, resistance heated furnace which can operate up to 4000° F.

The unit also is suitable for other heat treating operations in experimental work or small scale production.

Within the vacuum retort, which is 20 in. in diameter and 20 in. deep, is a hot zone 3½ in. in diameter and 6½ in. deep. It is produced by a resistance heated, radiant cylinder. Hot zones of varying sizes can be interchanged within the retort.

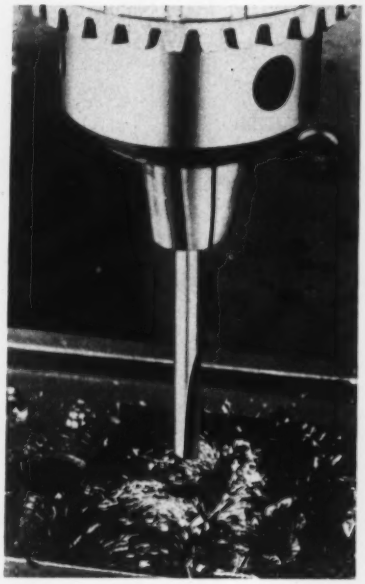
For more information, *write* F. J. Stokes Corp., 5500 Tabor Rd., Philadelphia 20, Pa.

Carbide Drill Eliminates Annealing, Distortion

IF YOU'VE been getting distortion and annealing when drilling hardening steel up to Rockwell C65, you need a chip-cutting drill designed to handle those jobs.

Called Hi-Roc, the tool is solid carbide and has a special drill point and flute form. It eliminates heat damage to the work.

Using a flood of water soluble coolant, the drill can be fed up to 2 ipm in Rockwell C60 material. Extensive tests on hardened sheets,



such as VascoJet and Thermold J, have proved the tools drill accurate, on-size holes in production.

For more information, *write* M. A. Ford Mfg. Co., Inc., 1545 Rockingham Rd., Davenport, Iowa.

Sandblaster Is Versatile

A DOUBLE-DUTY sandblasting cabinet has two ceramic-nozzled blast guns: A fixed gun allows the operator free use of both hands when holding objects to be blasted; the other is a handgun especially useful for cleaning small articles, crevices, angles, and heavy objects.

The cabinet has a strong perforated steel floor which screens the abrasive prior to automatic recycling. For more information, *write* Cyclone Sandblast Equipment Co., 42 Clara St., San Francisco 7, Calif.

Air Hoist Spot Loads

FOR those overhead handling jobs where you need variable hoisting and lowering speeds plus close load spotting control, consider the new line of air powered hoists introduced by Yale & Towne Mfg. Co.

Available in 1000 and 2000 lb capacities in link and roller chain models, the air hoists are ideal for explosive atmospheres or dusty conditions.

Positive load control is assured by a mechanical motor brake which works through reduction gearing to the motor. When air power is shut

flowability

IS THE SECRET...

of INDIANA METAL PRODUCTS CO.'S continued success in cold heading quality fasteners

"Our objective is to give our customers a superior product at a competitive price," says Norbert Schroeder, General Manager of Indiana Metal Products Co., Division of Textron Inc., Rochester, Indiana.

To achieve this goal, Indiana specifies Keystone "XL" Wire for the manufacture of cold headed fasteners. "XL" *flowability* keeps costs competitive by eliminating downtime and secondary operations as well as increasing tool life. *Flowability* makes a superior product free from fractures, with perfectly filled corners, collars and excellent surface characteristics. This results in superior products at lowest cost.

Keystone "XL" Wire can help you, too, produce a better quality product at a competitive price. Talk it over with your Keystone representative—or call us—today!

XL's *flowability* makes possible . . .

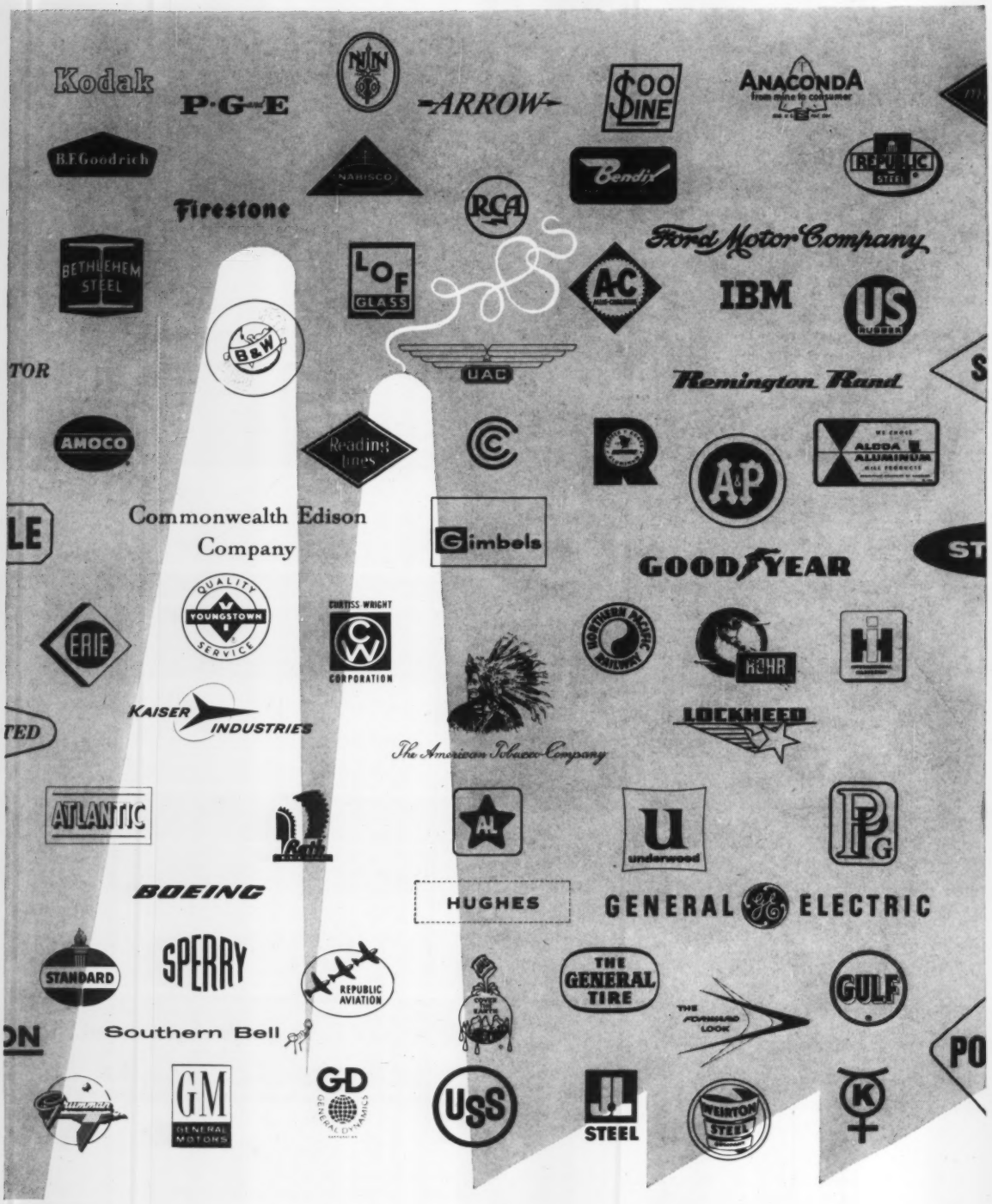
1. Bleacher bolt—extra large head, deep Phillips recess—2 blows 2. Brake assembly stud—round collar and square head formed simultaneously 3. Plastic-to-metal fastener—2 blows—2 diameters plus collar 4. Adjusting screw—5 diameters 5. Flat pan head—must be perfectly flat 6. Twin-fast wood screw—headed and slotted in a single blow. XL quality makes possible roll threading of this twin-fast screw with sharp *double lead* threads

Keystone Steel & Wire Company, Peoria 7, Illinois

KEYSTONE XL WIRE STUDY

KEYSTONE

WIRE FOR INDUSTRY



LEADING AMERICAN INDUSTRIES

offer their employees the Payroll Savings Plan for U. S. Savings Bonds

These are but a few of the leading firms which support the Savings Bonds program with more payroll savers than ever before in peacetime.

off, the brake locks automatically. For more information, *write* Yale Materials Handling Div., Yale & Towne Mfg. Co., 11000 Roosevelt Blvd., Philadelphia 15, Pa.

Counter Is Portable

THIS electronic counter (Model 1000-B) is built for laboratory, production, and processing counting needs. It fills the gap between slower electromechanical units and elaborate, high speed multidecade units.

Capable of counting 12,000 units a minute, the device can take its input from photoelectric cells, magnetic pickups, or contact closures.

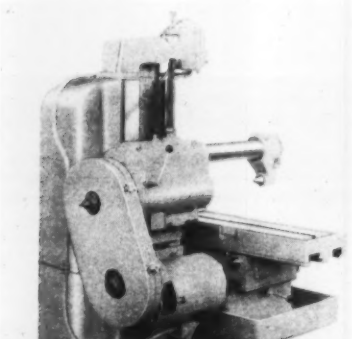
For more information, *write* Performance Measurements Co., 15301 W. McNichols, Detroit 35, Mich.

Milling Machine Built For Light and Medium Work

HERE's a bed type milling machine for light and medium production work that provides the dependability, accuracy, and versatility you need.

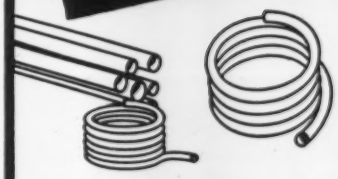
Emphasis in the design is on oversize, heavy components, including heavy duty saddles and steel bases.

The machine comes in three models: Model 1A for economy on small lot production work; Model



Series 2

PLUS ITEMS from your Whitehead Metals "Supermarkets"



PLASTIC PIPE

A full line of flexible and rigid plastic pipe and tubing in all commercial resins, in sizes from ⅛" to 4" OD. Fittings, cements and valves available from stock. Write for detailed literature.

NON-SKID ALUMINUM TREAD PLATE

Providing amazing gripping power (either oily or dry) this lightweight, corrosion resistant Alcoa product has a tough abrasive (fused aluminum oxide) rolled right into an aluminum base plate for longer wear. Available in four thicknesses —0.125", 0.188", 0.250" and 0.375" Write for descriptive booklet.

SHAFTING

Top quality shafting made of Monel, Tobin Bronze or Tempaloy. Originally developed for boats and other marine use, these shafts have gained wide industrial use in pumps and other machinery operating in corrosive atmospheres. Literature available.

WELDING FITTINGS

Stainless Steel forged welding fittings are stocked in I.P.S. sizes from ½" to 12" for Schedule 5S, 10S, 40S and 80S Pipe. All conventional shapes are on hand. Welding fittings are also stocked in Aluminum, Monel, Nickel and Inconel. Literature available.

DISSIMILAR METALS WELDING WIRE

A new item introduced at the 1958 Welding Show, Inco-Weld "A" Wire is a single product for inert gas welding of most combinations of dissimilar alloys. Technical Service and complete literature on request.

These "Plus Items" and many more are available in addition to a wide selection of corrosion-resistant sheet, rod and tube.

All told, there are more than 20,000 items distributed and serviced by Whitehead. All are available, off-the-shelf, from the nine Whitehead Metal "Supermarkets." All are the products of such leading producers as Alcoa, Anaconda, Inco & Crucible Steel to name just a few.

When you call Whitehead you get fast service, and frank, unbiased help in selection. Technical service when you need it. Add it up and you'll find it pays to call

WHITEHEAD METALS, INC.

Other Offices and Warehouses:
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ROCHESTER • WINDSOR, CONN.

303 West 10th Street • N. Y. 14, N. Y.

Howard Beacham tripled wheel life,

Howard Beacham has been a Bay State Abrasive Engineer for fifteen years and his total experience is double that. He's worked on grinding problems that have involved every type of metal in jobs as tiny as miniature bearings and as big as the world's largest air compressors and steam turbines.

cut dressing frequency in half at New Process Gear

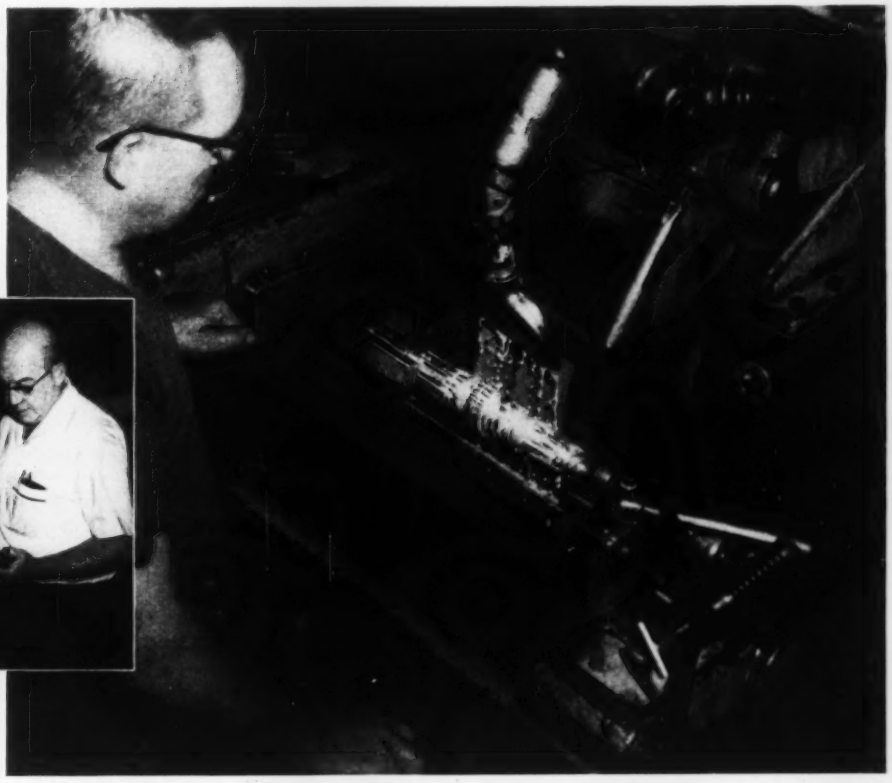
The closer you get to automation, the more it hurts to have production interrupted. That was the principal problem at Chrysler's New Process Gear Division where semi-automatic grinding of flats on truck transmission shafts was halted by wheel dressings every eleven pieces.

The three competitive wheels used in this simultaneous "cam grinding" operation wore down so fast they had to be replaced every week. And, on top of that, an alarming number of shafts were being cracked during the grinding operation.

Bay State's Howard Beacham was called in on the job. He specified a trio of Bay State wheels that produced really spectacular results.

Production jumped to twenty-five perfect shafts per dressing and wheel life went up to three full weeks. Finish was excellent, too.

Why not talk to your own Bay State representative next time you have a grinding problem? Like Howard Beacham he's a trained specialist. *Better grinding at lower cost . . . that is his business.*



Operator Henry Kotas runs grinder equipped with one 24 x 1-21/32 x 12 and two 24 x 1-3/4 x 12 Bay State wheels. The three wheels simultaneously grind flats on main shaft for 5-speed truck transmission.

(*Above*) Manufacturing Engineer Wiley Bell and Plant Superintendent Nelson Fisk examine finished truck transmission shaft.

BAY STATE WHEELS of PROGRESS

BAY STATE ABRASIVES

Bay State Abrasive Products Co., Westboro, Massachusetts.
In Canada: Bay State Abrasive Products Co., (Canada) Ltd., Brantford, Ontario.
Branch Offices: Bristol, Conn., Chicago, Cleveland, Detroit, Pittsburgh. *Distributors:* All principal cities.

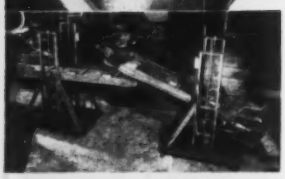
6323-MF

MAY-FRAN

LITTLE HUSTLER

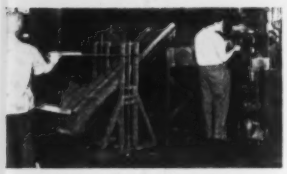
TRADE MARK REGISTERED

...the world's most versatile low cost conveyor



COMPLETELY PORTABLE

INSTANTLY ADJUSTABLE



INFINITELY VARIABLE

Here's an amazing conveyor unit priced within reach of virtually every manufacturer! Little Hustler conveyors eliminate costly manual handling . . . provide maximum flexibility for handling all types of small parts, stampings and assemblies between operating stations. Fully portable and easily adjustable, Little Hustlers are ideal for applications where working heights and layouts are subject to frequent change. To meet the varied demands of industry, May-Fran produces three basic models in lengths, widths and drives to meet individual operating requirements. All are available with belts of Neoprene-impregnated cotton, metal or cotton cleated-belting and wire-mesh belts. Parts-trap and side guards shown above are optional.

For complete information . . . write for your copy of May-Fran Bulletin MF-2-413.

MAY-FRAN ENGINEERING, INC.
1725 Clarkstone Road • Cleveland 12, Ohio

NEW PRODUCTS and equipment

1B with hydraulic feed, for longer production runs; and Model 1C for low production and toolroom work.

You have a choice of two tables on 1B and 1C models—9 13/16 x 27 in. or 9 13/16 x 32 in. For more information, *write* Producto Machine Co., 990 Housatonic Ave., Bridgeport 1, Conn.

Tilter Handles Big Drums

YOU can lift, stack, and pour liquids from 1000 lb drums easily with the Drum Tilter made by Big Joe Mfg. Co.

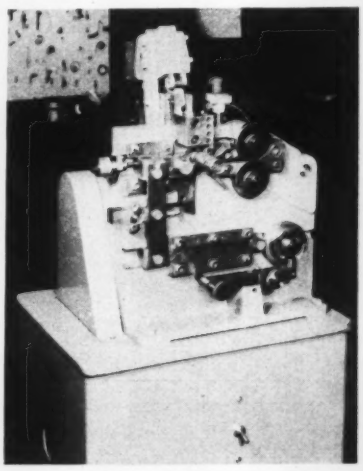
Suited for movement in and out of narrow aisles, the truck permits tilting the drum to any angle and holding in that position any length of time.

Battery powered with a hydraulic lift, the Drum Tilters are available in various lifting heights. For more information, *write* Big Joe Mfg. Co., Chicago, Ill.

Speed of Spring Coiler Matched to Assembly Line

HERE is an automatic spring coiler which can be adapted to the speed of assembly line production. The standard model can coil 40 to 280 in. a minute. Addition of a special worm gear will permit speeds of 160 to 1120 in. a minute.

The coiler can handle round wire from 0.005 to 0.040 in. in diameter

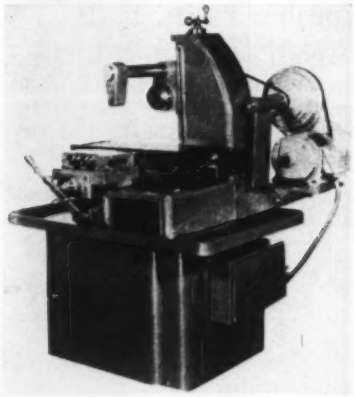


without special equipment or arbors. It coils springs with 0.045 in. minimum ID to 1¼ in. OD. Adjustments for pitch, diameter, and length of spring can be made in a matter of seconds.

For wire shapes other than round (square, oval, flat, plastic coated, or enamel wire), special tooling is required. For more information, *write* Special Machinery Div., Perkins Machine & Gear Co., West Springfield, Mass.

Mill Has Hydraulic Feed

OPERATION of the hydraulic system on the Hydromill is foolproof and provides positive feed. It has only three main parts for quick and easy service, and provides change-over on feeds in less than 1 minute.



The table has a working surface of 8 x 25 in., a longitudinal travel of 12 in., and a transverse travel of 8 in. With a standard 1½ hp, 1140 rpm motor, the spindle has ten speeds, from 75 to 2700 rpm. Feed ranges from 0 to 600 ipm.

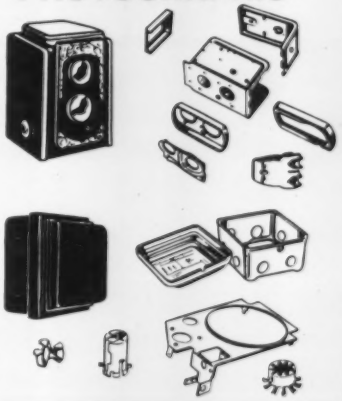
The Hydromill will take a 7 in. diameter cutter under the overarm. For more information, *write* Northern Illinois Machinists, Crystal Lake Road, McHenry, Ill.

Cutting Fluid for Use With Carbides Ups Output

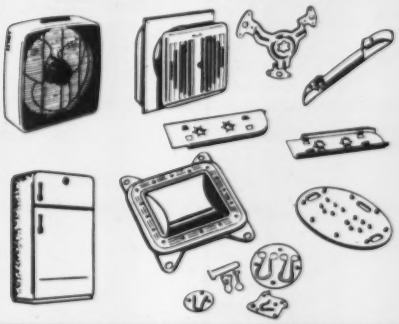
BY PERMITTING a one-third increase in the work feed rate, a water-soluble cutting fluid for use

Whatever Your Field
Check DE-STA-CO
for Stampings with the Plus

ELECTRICAL
ELECTRONIC
PHOTOGRAPHIC



HEATING—COOLING



HARDWARE
AUTOMOTIVE
AIRCRAFT

DE-STA-CO—stampings since 1915—today THE name in toggle clamps

De-Sta-Co has been recognized for over 25 years for its leadership in the field of production clamping devices. Today, our engineers are creating improved and special toggle clamps to meet your specialized production problems in every field. Over 130 models, types and sizes, stocking distributors everywhere. Send for catalog.

Our range of stamping production has made De-Sta-Co known as an important source from coast to coast. We're regular suppliers to the most widely diverse industries—electrical, electronic, photographic—refrigeration, heating and ventilating—hardware, automotive, aircraft. All of these require top quality—and we take off our hats to none—but in addition to quality they want De-Sta-Co's *other* pluses: service, integrity, modern equipment, second operation facilities, ample inventories of all common and many unusual materials. Our know-how is as extensive as you'll find in the business and the big *pluses* we give you *gratis*!

Next time, check with De-Sta-Co for stampings, prices and *PLUSES*! Prints, samples or detailed letter will get you fast results. Qualified representatives from coast to coast. Write for the name of the De-Sta-Co man in your area.

DE-STA-CO

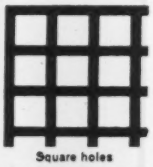
ORIGINATORS OF PRODUCTION CLAMPING

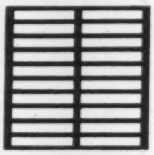
De-Sta-Co is widely known for toggle clamps, stampings, precision washers, spacers, shims, shim and feeler stock, blower housings and marine specialties.

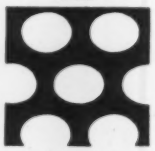
DETROIT STAMPING COMPANY
359 MIDLAND AVENUE • DETROIT 3, MICHIGAN

H&K PERFORATED MATERIALS

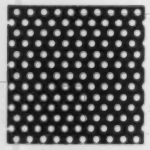
for Industrial or Decorative Uses

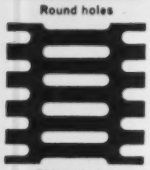

Square holes

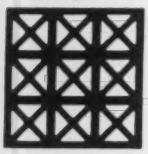

Slots


Oval holes

THOUSANDS OF DIFFERENT PATTERNS AVAILABLE


Round holes


Oblong holes


Decorative patterns

H & K facilities enable the perforating of all metals, wood, plastics and cloth fabrics. Perforated materials can be furnished in sheets, coils, rolls or plates. Fabricating services include shearing, rolling, welding and forming.

Perforated metal can be ordered with special finishes: aluminum—color anodized or brushed and lacquer finish; steel—painted, chrome plated, enameled, japanned or other baked-on finish. Decorative patterns can be embossed if requested.

Many patterns in steel sheets (industrial or decorative) are in stock at our warehouses. Send for H & K Stock List Brochure.

FIND NEAREST H&K AGENT IN THE Yellow Pages

Listed Under "Perforated Metals"

Write to nearest H & K office today—for General Catalog

THE Harrington & King PERFORATING CO. INC.

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Chicago 44, Illinois

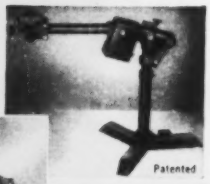
New York Office and Warehouse
118 Liberty Street
New York, New York

ARONSON Offers You Over 200 PROVEN *Standard Stock Models* of Quality POSITIONERS "POSITIONEERED" to your exact Requirements

Patented

Aronson TracTred (T. M. Reg.) Turning Rolls for thin-walled heavy cylindrical work to 27 tons capacity. Zero to 100 IPM turning speed and Built-In Grounding.

Aronson Universal Balance Positioners (T. M. Reg.) position your weldments effectively, instantly for downhand welding. Capacities to 2000 lbs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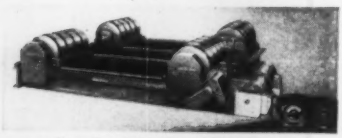
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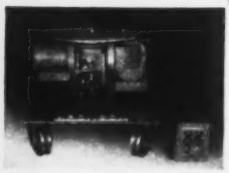
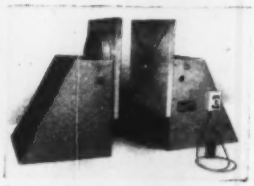

Model D Gear Driven Positioners. Compact, Precise, Rugged. Capacities to 1000 lbs.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NEW PRODUCTS and equipment

with throwaway carbide inserts can boost production rates 25 per cent.

The manufacturer says over-all improvements in production and costs as high as 40 per cent have been realized with certain high alloy steels.

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For more information, *write* Shell Oil Co., 50 W. 50th St., New York 20, N. Y.

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The Mechamatic process is automatic except for loading and unloading of parts. For more information, *write* Mecha-Finish Corp., P. O. Box 308, Sturgis, Mich.

NEW literature

Write directly to the company for a copy

Thermowell Material Guide

A 4-page chart tells how to select the right Thermowell material for over 325 temperature measuring applications. Thermo Electric Co. Inc., Saddle Brook, N. J.

Copper Alloy Listing

A 14-page booklet gives the nominal composition, available forms, mechanical and physical properties of wrought copper and copper-base alloys. Metals Div., Western Brass Sales, Olin Mathieson Chemical Corp., East Alton, Ill.

Cobalt Data Sheet

A 5-page booklet gives information on electrical, magnetic, mechanical, and high temperature properties; transformations; diffusion; solubilities of oxygen; and hot hardness. Cobalt Information Center, Battelle Memorial Institute, 505 King Ave., Columbus 1, Ohio.

Guide to Portable Elevators

"The Portable Elevator for Vertical Material Handling," a 25-page booklet, gives data on how to select portable elevators and reviews various types. Association of Lift Truck & Portable Elevator Manufacturers, 1 Gateway Center, Pittsburgh 22, Pa.

How To Cut Milling Costs

"Winning Combinations That Reduce the Cost of Chips," Booklet V-68, discusses facts on milling and boring operations, such as the importance of matching cutters to machine and work and factors affecting tool selection. Cutter Div., Ingersoll Milling Machine Co., 505 Fulton Ave., Rockford, Ill.

Introduction to Handling

"The Basic Concepts of Industrial Material Handling" tells what handling is, what its costs are, what its objectives are, and how proper equipment is selected. Educational Div., Material Handling Institute Inc., 1 Gateway Center, Pittsburgh 22, Pa.

Data on 18-8 Stainless

This 8-page folder covers analyses, corrosion and oxidation resistance, high and low temperature characteristics, physical and mechanical properties. Folder TDC-190. Tubular Products Div., Babcock & Wilcox Co., Beaver Falls, Pa.

Gas Pressure Regulators

A 36-page catalog covers a line of cylinder, manifold, and station pressure regulators for welding, cutting, and heating gases. Flow and pressure specifications, inlet and outlet dimensions are given for each unit. Air Reduction Sales Co., a division of Air Reduction Co. Inc., 150 E. 42nd St., New York 17, N. Y.

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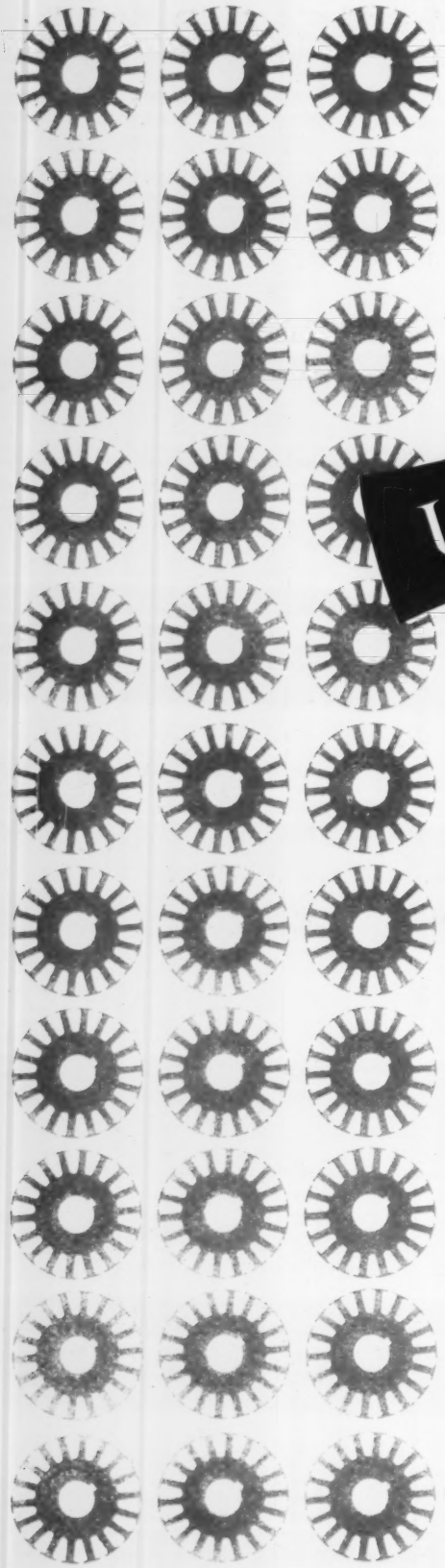

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Cold Rolled Sheets
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Electric Weld Line Pipe
Spiral Welded Pipe

Mills Boost Output as Orders Pour in

February 2, 1959

STEELMAKING operations could top 90 per cent of capacity during a few weeks of the first half. Second quarter operations may average 85 per cent.

That's the liberal view in the industry. Some of the more conservative, such as Chairman Roger M. Blough of U. S. Steel Corp., believe the industry will operate at 75 to 80 per cent during the first two quarters, with higher output in the second.

Last week's orders were the best in about two years. Several mills booked tonnage in excess of capacity. Backlogs mounted even though steelmakers boosted their operations 5.5 points to 78 per cent of capacity. Production was about 2,212,000 net tons of steel for ingots and castings, the largest of any week since June 10, 1957. January's output was about 9.3 million ingot tons, highest in 19 months.

BUYERS STOCK UP— Although the United Steelworkers haven't spelled out their contract demands, they've launched an advertising campaign for "$1 billion in new money." That's enough to convince most steel buyers that they're in for a long, hard summer. Since their stockpiles aren't big enough to sustain current operations, they'll have a hard time laying up much of a surplus. Inventory rebuilding fever is high in almost all industries, but it's especially evident among the automotive, farm implement, and appliance manufacturers.

AUTOMAKERS LAY PLANS— Following the pattern set by Ford, Chrysler Corp. will start expanding its steel inventory in March. (It's believed to have a 25 or 30 day supply of flat-rolled material.) Fisher Body Div. of General Motors won't comment on the report that it's aiming at a 60 day inventory by June 30. Company officials say they have enough sheets in stock to last about two and a half weeks. They contemplate an "orderly" buildup as production schedules increase.

SHEETS IN TIGHT SUPPLY— Sheet mill products are in strong demand in all sections of the country. Chicago steelmakers are booked through the first quarter on cold-rolled, galvanized, and enameling stock. They expect to be sold out through June. At Philadelphia, deliveries on cold-rolled sheets are running into late April and May. Hot-rolled products, readily available in the past, are also feeling the squeeze. Eastern mills are quoting six weeks' delivery. Coated products have been on allocation for several weeks, and it's believed that cold-rolled sheets are next in line. Some mills will slap controls on stainless sheets and strip during the second quarter.

BARS AND PLATES GAIN— Demand for hot-rolled and cold-finished bars is on the upswing, thanks to automotive buying, but mills still have a lot of open capacity. Although flats are in tighter supply, most items are still available on short notice. Customers release their orders so late in the month that it's almost impossible for mills to work them into rolling cycles.

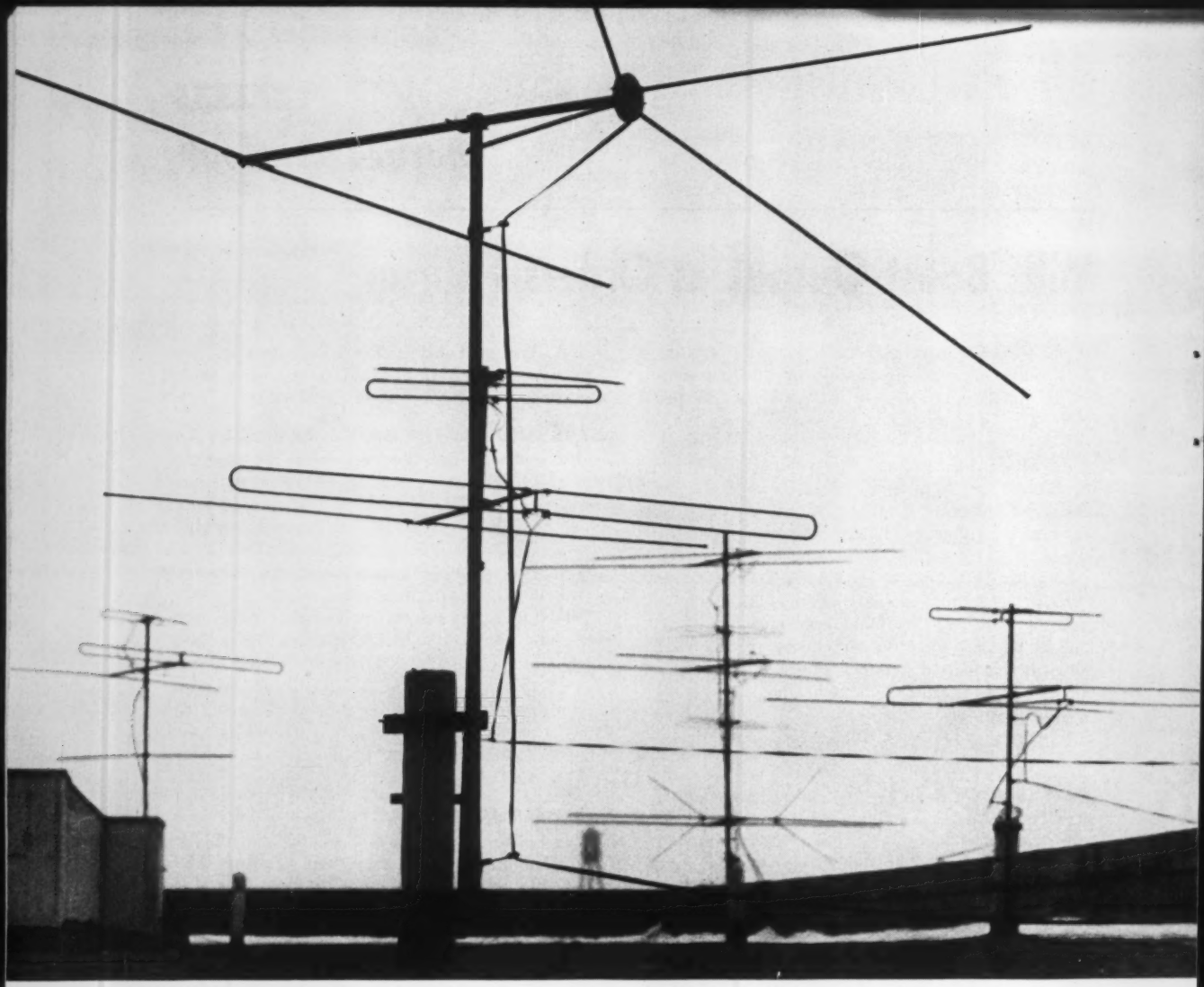
Plates are perking up moderately in the Midwest as fabricators replenish their inventories. Deliveries may tighten during the second quarter if railroads and line pipe manufacturers take bigger tonnages. Although floods played havoc with steel production in some areas (see Page 48), they'll contribute to the plate resurgence. Many bridges and barges are in need of repair.

CORPORATION'S BACKLOG— U. S. Steel's order backlogs stood at 4.4 million tons on Dec. 31, 1958, higher than they were on June 30 or Sept. 30, but still below the 4.9 million tons at the end of 1957.

WHERE TO FIND MARKETS & PRICES

	News	Prices
Bars, Merchant	119	127
Reinforcing	128	
Bridge Costs	118	
Boiler Tubes		*
Clad Steel		131
Coke		133
Coal Chemicals		133
Charts:		
Finished Steel		125
Ingot Rate	124	
Scrap Prices		137
Comparisons		125
Contracts Placed	121	
Contracts Pend.	121	
Electrodes		133
Fasteners		130
Ferroalloys		134
Fluorspar		133
Footnotes		130
Imported Steel		133
Ingot Rates	124	
Metal Powder		133
Nonferrous Met.	140	142
Ores	120	133
Pig Iron	143	132
Piling		127
Plates	119	127
Plating Material		143
Prestressed Strand		130
Price Indexes		125
Producers' Key	128	
R.R. Materials		130
Refractories		133
Scrap	137	138
Semifinished		127
Service Centers	124	132
Sheets	119	128
Silicon Steel		129
Stainless Steel	119	131
Strip	119	129
Structurals	120	127
Tin Mill Prod.	120	129
Tool Steel		131
Tubular Goods	144	131
Wire	144	129

*Current prices were published in the Jan. 5 issue and will appear in subsequent issues.



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Take a good long look at the possibilities and advantages of using Weirkote zinc-coated steel to meet your tubing requirements. For the complete story on Weirkote and how it can help you, write Weirton Steel Company, Weirton, West Virginia.

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NATIONAL STEEL CORPORATION

STEEL
QUARTERLY SURVEY

MILL PRODUCTS	CURRENT INVENTORIES: UNDER 10 DAYS	10-30 DAYS	30-60 DAYS	60-90 DAYS	3-6 MONTHS	2nd Quarter FORECAST: LOWER	SAME	HIGHER
HOT-ROLLED CARBON BARS	3%	21%	47%	24%	5%	7%	64%	29%
COLD-FINISHED BARS	2%	16%	57%	16%	9%	18%	61%	21%
H & C-R SHEETS, STRIP	7%	22%	53%	13%	5%	4%	54%	42%
LIGHT PLATES	10%	8%	51%	21%	10%	6%	55%	39%
HEAVY PLATES	8%	8%	44%	29%	11%	10%	55%	35%
STRUCTURAL SHAPES	10%	11%	53%	15%	11%	11%	67%	22%
COPPER & BRASS	12%	16%	63%	6%	3%	8%	71%	21%
ALUMINUM	12%	14%	61%	8%	5%	3%	69%	28%

FIGURES are percentages of respondents to STEEL's quarterly survey.
COLOR UNDERSCORED figures show how most respondents reported.

Buildup of Inventories Continues

Buyers of all products are adding to their stocks. Look for trend to continue in second quarter. Some firms are anticipating a steel strike next summer

THE TABLE above shows a major reason why steelmakers expect a strong first half. A large segment of steel buyers will add to their inventories in the next three months. Their comments indicate that the buildup will extend to midyear.

Uptrends in inventories should also boost sales of copper, brass, and aluminum. Many buyers will increase their stocks this quarter.

• **Where Inventories Gain**—Hot-rolled bars, hot and cold rolled sheets, strip and plates are the leading items, STEEL's survey of mill product buyers shows. Small fabricators are leading the trend.

Steel inventories have gained gradually over the last three months. Some 21 per cent of respondents to STEEL's survey say their stocks are larger than they were three months ago; 18 per cent have lower inventories. Buyers agree that their buildup in the coming three months will far exceed the quarter pace.

• **Why Stocks Grow**—A midwestern supplier of auto parts told STEEL that he is adding to his supply of welded tubes, cold-finished bars, and sheets because: "We have to have metal for parts when Detroit wants them, or a competitor will get the order. Normally, we keep steel inventories at a ten-day level. We will need steel on hand to supply automakers in July and August even if a steel strike begins July 1. We are starting to buy extra steel. We will warehouse it until it's needed."

A collet manufacturer adds: "We trimmed inventories for financial purposes in the last quarter of 1958. We're beginning to worry about a possible steel strike. As a result, we'll buy more bars than we need in the first half of 1959."

• **Deliveries Are Lengthening**—Many steel buyers who plan to strengthen their inventories share that view. Others say they'll add to stocks because delivery periods are lengthening. About 1 in 5 buyers of galvanized sheets and 1

in 10 purchasers of heavy plates complain about deliveries. Several purchasers are dissatisfied with deliveries of light plates, structural shapes, aluminum forgings, stainless steel castings, seamless tubes, and aluminum coated steel.

Inventories of several products are low in terms of current needs. About 3 in 10 buyers of sheets have less on hand than they'll need in 30 days.

Most buyers who think their stocks are too low say they'll be up to the desired level by May. As an Indiana purchaser comments: "We'll have our inventories where we want them in three months."

Third quarter buying trends will be determined by labor negotiations. If steel and aluminum mills are closed by prolonged strikes, metalworkers will consume the materials they added in first half.

Suppliers of parts to a few recession-hit industries continue to pare inventories. A firm selling equipment to railroads will cut its stocks of plates for at least three months. Says this firm's purchasing agent: "Decreases in sales have made our inventories too large." About 9 per cent of the buyers of cold-rolled sheets and 5 per cent of cold-finished bar buyers consider their stocks too high for comfort.

• **No Inventory Problem** — Overstocks won't be a problem to sellers of most steel and nonferrous items. Only 3 per cent of all buyers say they have "too much" in inventory. As recently as three months ago (STEEL, Nov. 3, 1958, p. 107), 1 in 5 buyers reported that he had an oversupply in at least one product.

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The revolutionary dc welding performance achieved by the new Miller Gold Star transformer, completely sealed, semimetallic rectifier and weld stabilized circuit is now available in the SRH models. Developed specifically to save room, the SRH is only 30¼" high, offers 200, 300 and 400 ampere machines ideally designed for stacking or paralleling in minimum space.
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Design Detail Standards Will Cut Bridge Costs

Increased standardization of design details can result in less costly highway bridges, says James M. Straub, president, Fort Pitt Bridge Works, Pittsburgh.

Urging adoption of widely tested items recommended as standard by federal, state, and county highway groups, Mr. Straub, who is first vice president of the American Institute of Steel Construction, says such standards include bearings, diaphragms, drains, expansion joints, railings, and composite shear connectors.

Steel lends itself to standardization, and various items introduced by the industry have already done much to modify costs, speed deliveries, and simplify bridge-building. Numerous detail designs are available for economical fabrication and duplication to meet requirements of loading, span, structure type, and site conditions.

Because steelmaking capacity has increased 61 per cent over its potential at the end of World War II, the industry's ability to produce structural shapes is now at a record 8 million tons annually. Mr. Straub also points out that fabricating capacity is at a record high.

Orders for fabricated items, mainly bridges, to be completed this year for the national highway program, will total more than 1 million tons.

Mr. Straub presented his views at a meeting of the American Road Builders Association.

Stainless Steel . . .

Stainless Steel Prices, Page 131

A. M. Byers Co., Pittsburgh, is the latest producer to join the ranks of those advancing prices on stainless bars, billets, and wire. Its increase of 3¾ per cent, effective Jan. 22, is in line with those of other makers.

Steel Bars . . .

Bar Prices, Page 127

Demand for hot-rolled carbon bars is improving, but productive capacity is accommodating requirements without strain. The problem in the case of bars is that customers are releasing their orders too close to rolling cycles.

Mills expect a bulge in demand next quarter as consumers rush orders onto mill books in hope of getting in substantial tonnage before a midyear steel strike. Inventories of most consumers are down, and expectations are some of them will begin building up their stocks soon —notably those in automotive work. Some of the heaviest orders being received by makers are on defense account.

Requirements for cold-finished bars have been increasing of late, but they still lag behind hot-rolled volume.

Sheets, Strip . . .

Sheet & Strip Prices, Pages 128 & 129

Such a rush is on for sheet tonnage, as consumers seek to build up inventories, that producers practically are allocating their production. They don't use the naked term, but "informal allocation" is more frequently heard since demand has expanded to the point producers find it necessary to protect themselves and their regular customers.

Through informal allocations, the mills make sure that tonnages sought by consumers are consistent with customers' buying practices in 1958 and 1957.

Most makers say deliveries, particularly of cold-rolled sheets, now extend into April and May. Shipments of hot-rolled products also are stretching out, now running to six weeks.

One large producer, with plants at various points, says that over the last two weeks or so demand has been developing at an explosive rate. There's no question now that the rush is on to build up inventories against a possible midyear interruption in shipments due to a steel strike.

Plates . . .

Plate Prices, Page 127

The market outlook for plates is sparked by a noticeable pickup in bookings and a slight extension in deliveries. Shipments have been shoved into March in some instances in the East as hedge buying against a midyear steel strike begins to be felt.

Particularly significant is a report from Texas that a leading district mill is swamped with plate orders and is planning to institute some form of allocation for April, May, and June deliveries.

Pittsburgh mills are also booking more orders, but they still can take

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on first full range flight!

U. S. missile program one step nearer to complete operational capability.

On the evening of November 28, 1958, a 100-ton ATLAS lifted from its pad at Cape Canaveral and arched majestically into the heavens. 30 minutes later its nose cone shot into the Atlantic, marking the first successful completion of its fully-programmed distance of 6300 statute miles.

The main part of the ATLAS structure is literally a huge fuel tank, the shell of which is thin gauge MicroRold stainless steel. Important factors in selection of stainless steel for the outer skin of the ATLAS are great strength at both high and low temperatures, resistance to corrosive exotic fuels and good workability.

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care of all the business coming to them.

Forward buying is held back in New England by the absence of large tonnage projects. But there has been a mild pickup in built-up plate girder volume in the district, and the outlook for larger tank tonnage is promising.

Structural Shapes . . .

Structural Shape Prices, Page 127

Structural steel bookings in December totaled 196,510 tons, 40 per cent greater than in the like month of 1957, reports the American Institute of Steel Construction. December tonnage was 19 per cent below November's, but it marked the seventh consecutive month bookings exceeded those in the comparable period of the preceding year.

Total bookings during 1958 were 2,773,444 tons, a drop of 10 per cent from 1957's 3,073,179 tons. However, bookings during the last half of the year were over 247,000 tons greater than during the first half, and 350,000 tons better than in the corresponding six months of 1957.

December shipments amounted to 266,600 tons, slightly under the previous month's total, and 17 per cent below that in the corresponding month of 1957. Total shipments for 1958 were 3,664,247 tons, only 12 per cent below the record tonnage shipped in the preceding year.

Tin Plate . . .

Tin Plate Prices, Page 129

Producers of tin plate expect full order books during the first half of this year. Demand is strong. Within the next couple of months, requirements will go up sharply as canmakers prepare for summer food packs. Most makers describe the present market as "tight," with orders developing at a faster rate in the Midwest than had been expected.

Steel Ingot Output Falls 24 Per Cent During 1958

Steel ingot production in 1958 totaled 85,254,885 net tons, reports the American Iron & Steel Institute. That's about 2000 tons less than the preliminary figure reported early in January. It compares with 112,714,996 tons in 1957, and the record 117,036,085 tons in 1955.

Of the year's output, 5,727,202 net tons were alloy steel (other than stainless), compared with 7,864,904 the preceding year. Stainless production amounted to 895,119 net tons, vs. 1,046,919 tons in 1957.

Production by states for December:

Steel Production by States—December, 1958
(Net tons)

By State:	December, 1958	12 Months, 1958
Massachusetts, Rhode Island, Connecticut	8,025	157,182
New York	414,175	4,011,965
Pennsylvania	2,011,082	20,847,137
New Jersey, Delaware, Maryland	566,039	6,344,254
Virginia, W. Virginia, Kentucky, Tennessee	404,832	3,953,452
Georgia, Alabama, Mississippi	334,745	3,515,781
Ohio	1,481,290	13,772,420
Indiana	1,343,246	12,627,795
Illinois	708,471	6,946,104
Michigan, Minnesota	653,304	5,153,333
Missouri, Oklahoma, Texas, Colorado	328,160	3,331,478
Utah, Washington, Oregon	202,284	2,058,298
California	254,869	2,535,686
Totals	8,710,522	85,254,885

Data from the American Iron & Steel Institute.

Iron Ore . . .

Iron Ore Prices, Page 133

Stripping and development operations on an ore mine at the extreme

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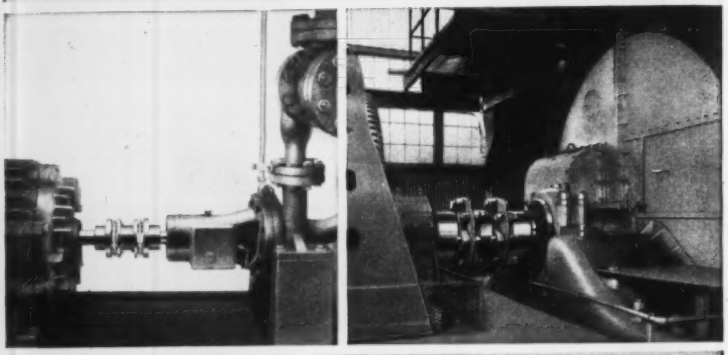

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They will protect your equipment and extend the life of your machines.
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end of the Mesabi range in Minnesota have been started by Jones & Laughlin Steel Corp., Pittsburgh. The Lind-Greenway mine should be an active producer of high grade beneficiated ore for many years. It's expected to produce about 700,000 gross tons yearly, about 10 per cent of J&L's blast furnace requirements.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

11,250 tons, also 1165 tons of reinforcing bars, Washington State, two-level freeway bridge, Lake Washington ship canal, Seattle, to Allied Structural Co., Chicago, low at $6,943,568

6600 tons, convention hall, Chicago, to American Bridge Div., U. S. Steel Corp., Pittsburgh.

1200 tons, galvanized steel radar towers (53) to Isaacson Iron Works, Seattle; subcontract from Wayne Construction Co., Seattle, general contractor at $1,428,665 to the U. S. Air Force.

1200 tons, reconstruction, Madison Ave. bridge, New York, through Melwood Construction Co., general contractor, to Schacht Steel Construction Inc., New York.

1200 tons, state bridge work, Bethlehem Township, New Jersey, to Schacht Steel Construction Inc., New York.

1200 tons, state bridgework, Susquehanna County, Pennsylvania, through Lycoming, Construction Co., Williamsport, Pa., to Harris Structural Steel Co., New York.

1060 tons, state bridgework, Monroe County, New York, through Grow Construction Co. to American Bridge Div., U. S. Steel Corp., Pittsburgh.

850 tons, building, Mohawk Valley Technical Institute, Utica, N. Y., through Gramercy Construction Co., to Bethlehem Construction Co., Bethlehem, Pa.

948 tons, state bridgework, Sullivan County, New York, through Merritt, Chapman & Scott Corp., New York, to City Iron Works, Wethersfield, Conn.

715 tons, state bridgework, Ulster County, New York, through John Aborio Inc., general contractor, to Harris Structural Steel Co., New York.

665 tons, Scandinavian Air Line terminal, Idlewild Airport, Long Island, New York, through William L. Crow Construction Co., to White Plains Iron Works, Peekskill, N. Y.

592 tons, six beam bridges, Susquehanna County, Pennsylvania, through Lane Construction Co., Meriden, Conn., to Anthracite Bridge Co., Scranton, Pa.

500 tons, structurals and bars, jail and public safety buildings, Miami, Fla., to Virginia Steel Co., Richmond, Va. (structurals), and Laclede Steel Co., St. Louis (bars); William A. Berbuesse Jr. Inc., Palm Beach, Fla., general contractor.

467 tons, state bridgework, Nassau County, New York, through Hendrickson Bros., general contractor, to Bethlehem Steel Co., Bethlehem, Pa.

450 tons, computer plant addition, General Electric Co., Phoenixville, Ariz., to Bethlehem Pacific Coast Steel Corp., San Francisco.

425 tons, juvenile court and detention home, Fulton County, Atlanta, Ga., to Steel Fabricators Inc., Cayce, S. C.; George A. Fuller Co., Atlanta, general contractor.

370 tons, approaches to Hood Canal bridge, Washington State, to Leckenby Structural Steel Co., Seattle; General Construction Co., Seattle, general contractor.

365 tons, state highway bridge, Montgomery City, N. Y., Arthur A. Johnson, general contractor, to City Iron Works, Wethersfield, Conn.

360 tons, five-span stringer bridge, Seekonk, Mass., to City Iron Works, Wethersfield, Conn.; Campanella & Cardi Construction Co., Hillsgrove, R. I., general contractor.

230 tons, state bridgework, Jefferson County, New York, through Lane Construction Co., general contractor, to City Iron Works, Wethersfield, Conn.

220 tons, angles, General Stores Supply Office, Navy, Philadelphia, to Knoxville Iron Co., Knoxville, Tenn.

180 tons, overpass, King County, Washington State, to Isaacson Iron Works, Seattle; Neukirch Construction Co., Seattle, general contractor.

170 tons, state highway bridge, Augusta, Maine, to Bancroft & Martin Rolling Mills Co., South Portland, Maine; Reed & Reed, Woolwich, Maine, general contractor.

168 tons, angles, General Stores Supply Office, Navy, Philadelphia, to Bethlehem Pacific Coast Steel Corp., San Francisco.

140 tons, plant building, High Voltage Engineering Co., Burlington, Mass., to Groisser & Shlager Iron Works, Somerville, Mass.; L. C. Blake Co., Quincy, Mass., general contractor.

110 tons, Seattle's Tolt River pipe bridge, to Bethlehem Pacific Coast Steel Corp., Seattle; Willar Construction Co., Seattle, general contractor.

STRUCTURAL STEEL PENDING

1500 tons, tunnel ribs, Metropolitan District Commission, Clinton-Marlboro, Mass.

1250 tons, two 13-span composite, WF beam bridges, Montpelier, Vt.; bids Feb. 13 to Montpelier; also, 450 tons of reinforcing bars, and 23,785 linear feet of steel sheet piling.

885 tons, angles and channels, General Stores Supply Office, Navy, Philadelphia; bids Feb. 2 and 3.

820 tons, angles and tees (300), General Stores Supply Office, Navy, Philadelphia; bids Feb. 2; also, 365 tons of wide flange sections.

545 tons, three-span girder and roller beam bridges, Ansonia, Conn.; bids Feb. 9 to Hartford, Conn.; also, 130 tons of reinforcing bars.

345 tons, state highway bridge, Bangor, Maine; bids in to Augusta, Maine.

308 tons, two steel railroad bridges for dismantling, Rocky Reach power project; bids to Chelan County P.U.D. No. 1, Wenatchee, Wash., Feb. 20.

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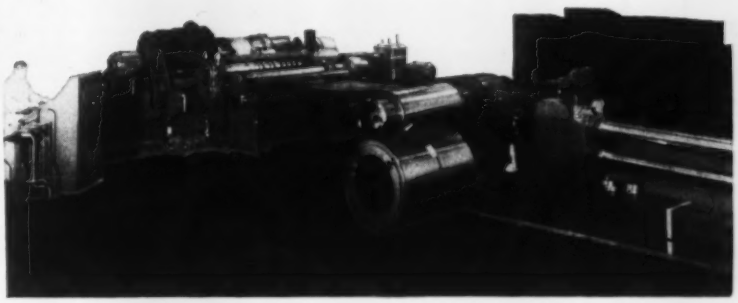

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Hammer operator runs finger around depression made in TI-CO sheet. Although hammered area resembles a shot-peened finish, the zinc coating has not flaked

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225 tons, overpass, Multnomah County, Washington State; Corkum Construction Co., Portland, Oreg., low base bid; Western Steel reported low for subaward.

215 tons, two 3-span composite, WF beam bridge, Berling, Vt.; bids Feb. 6 to Montpelier, Vt.; also 100 tons of reinforcing bars.

210 tons, 3-span composite, WF beam bridge, Middlesex, Vt.; bids Feb. 27 to Montpelier, Vt.; also, 105 tons of reinforcing steel, and 4425 linear ft of steel piling.

158 tons, state bridge, Tigard, Oreg., Pacific Construction Co., Portland, Oreg., low on the general contract; Portland Erection Co., Portland, reported low on the subcontract.

Unstated, recreation center, Portland, Oreg.; bids in.

REINFORCING BARS . . .

REINFORCING BARS PLACED

1330 tons, highway structures, Louisville-Lexington interstate 64, Franklin County, Kentucky, to American Builders' Supply Co., Louisville; Ralph E. Mills Co., Louisville, is general contractor; 55 tons, structurals, to Bedford Foundry & Machine Co., Bedford, Ind.

490 tons, Leverett House (dormitory), Harvard University, Cambridge, Mass., to Northern Steel Inc., Medford, Mass.; George A. Fuller Co., Boston, General contractor.

405 tons, hangar, Northeast Air Lines, Logan Field, Boston, to Northern Steel Inc., Medford, Mass.; L. & R. Construction Co., Reading, Mass., general contractor.

232 tons, Washington State highway bridge, Yakima County, to Bethlehem Pacific Coast Steel Corp., Seattle; Everett McKellar, Chelan, general contractor at $230,121.

225 tons, Washington State, overpass, Auburn, to Bethlehem Pacific Coast Steel Corp., Seattle; Neukirch Construction Co., Seattle, general contractor.

180 tons, state highway structures, Falmouth-Portland, Maine, to Bancroft & Martin Rolling Mills Co., South Portland, Maine; W. H. Hinman Inc., North Anson, Maine, general contractor.

135 tons, approaches to the Washington State Hood Canal floating bridge, to Soule Steel Co., Seattle; General Construction Co., Seattle, general contractor.

125 tons, five-span stringer bridge, Seekonk, Mass., to Northern Steel Inc., Medford, Mass.; Campanella & Cardi Construction Co., Hillsgrove, R. I., general contractor.

120 tons, steel sheet piling, bridge substructure, Boston-Milton, Mass., to Bethlehem Steel Co., Bethlehem, Pa.; J. F. White Contracting Co., Westwood, Mass., general contractor.

100 tons, juvenile court and detention home, Fulton County, Atlanta, to Joseph Fox Co., Birmingham; George A. Fuller Co., Atlanta, general contractor.

100 tons, state highway bridge, Hopkinton, N. H., to Bancroft & Martin Rolling Mills Co., South Portland, Maine; Louis A. Scheyd, Hooksett, N. H., contractor; 85 tons of structural steel to Lyons Iron Works, Manchester, N. H.

76 tons, Montana State College, Bozeman, Mont., to Bethlehem Pacific Coast Steel Corp., Seattle.

50 tons, Great Western Co. plant, Seattle, to Bethlehem Pacific Coast Steel Corp., Seattle.

REINFORCING BARS PENDING

2500 tons, north approach to Lake Washington (Washington State) canal freeway bridge; bids called Feb. 17.

1600 tons, Tolt River dam, Seattle; Anderson Construction Co. Inc., and Wilder Construction Co., Seattle, joint low at $5,759,155.

1165 tons, Washington State freeway bridge, Seattle; bids in.

390 tons, General Stores Supply Office, Navy, Philadelphia; bids Feb. 9.

155 tons, Washington State highway bridge, King County; general contract to Dale M. Madden, Seattle, low at $230,132.

180 tons, Oregon State highway projects, Douglas and Josephine Counties; bids in.

160 tons, Fenway Motor Hotel, Boston; S. & A. Allen Construction Co., Boston, general contractor.

PLATES . . .

PLATES PLACED

1492 tons, surplus steel piling, Rocky Reach hydroelectric project, Washington State, sold to Manson Construction & Engineering Co., Seattle, by the Chelan County P.U.D. on high tender of $114,797.

PLATES PENDING

18,855 tons, 54 and 66 in. diameter steel waterpipe, Seattle's Tolt River project; bid date advanced to Feb. 18.

565 tons, carbon, General Stores Supply Office, Navy, Philadelphia; bids Jan. 30; also, 55 tons of stainless plates, bids Jan. 26; and 500 tons of carbon sheets, bids Jan. 26.

270 tons, high tensile, Grade Hy-80, Navy Purchasing Office, Washington, D. C., bids Feb. 3.

160 tons, 500,000 gallon water tank, Air Force station, Mendocino County, Calif.; bids Feb. 9, U. S. Engineer, San Francisco.

130 tons, 360,000 gallon steel water tank, Vance Air Force Base, Enid, Okla.; bids Feb. 12, U. S. Engineer, Tulsa, Okla.

PIPE . . .

CAST IRON PIPE PLACED

88 tons, 16, 12, and 6 in. waterpipe for Auburn and Shelton, Wash., to Pacific States Cast Iron Pipe Co., Seattle.

CAST IRON PIPE PENDING

440 tons, 8 in.; bids in at Everett, Wash.

RAILS, CARS . . .

LOCOMOTIVES PLACED

Chicago & Northwestern, sixteen 1750-HP road switchers, to Electro-Motive Div., General Motors Corp., La Grange, Ill.

Chicago, Milwaukee, St. Paul & Pacific Railroad, 25 diesel locomotives, 1750 hp, to Electro-Motive Div., General Motors Corp., La Grange, Ill., costing $8.5 million.

Bath & Hammondsport, one 2000 hp diesel switcher, to the Plymouth Locomotive Works, Plymouth, Ohio.

Chicago, Milwaukee, St. Paul & Pacific, fifty-two 1750 hp road switchers, to Electro-Motive Div., General Motors Corp., La Grange, Ill.

LOCOMOTIVES PENDING

Alaska Railroad, Anchorage, Alaska, six steam and six diesel; bids Feb. 12, Property & Supply Branch, Anchorage.

RAILROAD CARS PLACED

Lehigh Valley, 125 all-steel flatcars, to its own shops.

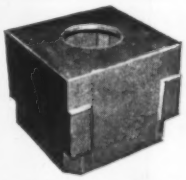
Chicago, Milwaukee, St. Paul & Pacific, 750 freight cars, placed; orders comprise 300 fifty-ton boxcars, and 100 seventy-ton insulated boxcars, to Pullman-Standard Car Mfg. Co., Chicago; 300 fifty-ton boxcars to General American Transportation Corp., Chicago, and 50 seventy-ton flatcars to be announced later.

Pittsburgh & Lake Erie, 500 seventy ton steel hopper cars to the Despatch Shops, East Rochester, N. Y.

RAILROAD CARS PENDING

Louisville & Nashville, 3000 seventy-ton coal hopper cars, to be purchased this year.

COVERED HOT TOP BRICK
INGOT MOLD PLUGS



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Service Center Shipments To Gain 10% This Quarter

SHIPMENTS from steel service centers (warehouses) will be 10 per cent higher in the first quarter than they were in 1958's fourth quarter.

That's the consensus of 900 members of the American Steel Warehouse Association. The Chicago and midwest section reports better prospects than the eastern seaboard, or the Detroit-Cleveland-Pittsburgh areas. The Pacific Coast and Texas regions are optimistic, primarily because of high level defense spending.

• **Light Products Active**—Sales of flat-rolled products, especially galvanized, are strong, but shipments of structurals, plates, and bars show little improvement. Stainless steel is moving in better volume, and cold-finished bars, alloy steel, and tubular goods are experiencing moderate sales gains.

Robert G. Welch, executive vice president of the association, says a steel strike is being anticipated in a lot of planning and discussion about inventory buildups. Stock accumulations have been spotty so far, though the service centers are being queried about their plans for building inventories. Many users are reluctant to tie up extensive amounts of capital and floor space. They want to avoid the costs by using the stocks and services of the service centers, says Mr. Welch.

• **Inventories Ample** — Warehouse association records show service center inventories of industrial steel products (3.4 million tons) are ample for normal requirements. A full range of sizes is available, and virtually no item is in short supply. Service centers cut their inventories slightly during 1958, but their purchases of steel will exceed their sales during the first half of 1959.

Here's how association members report conditions in their areas:

New England—Shipments will be up 10 per cent in the first quarter. The electronics and nuclear energy industries are active, but the machine tool, textile, and plastics industries are slow. Plates, sheets, light bars, and bar shapes are moving well. (F. H. Lovejoy, president, Wheelock, Lovejoy & Co. Inc., Cambridge, Mass.)

New York and New Jersey—Shipments are improved, but they are below expectations. On the basis of January shipments, the first quarter will be only slightly better than the last quarter, 1958. (Ralph W. Shaw Jr., president, A. R. Purdy Co. Inc., Lyndhurst, N. J.)

Detroit - Cleveland - Pittsburgh-Cincinnati — Shipments haven't picked up as much as they have at some other points. There's little indication of a strong trend toward heavy inventory rebuilding. (George L. Stewart, president, Jones & Laughlin Warehouse Div., Indianapolis.)

Chicago-Milwaukee-Kansas City—A slow, steady rise will put first quarter shipments up about 10 per cent over those in last quarter, 1958. Strong demand for flat-rolled products will continue throughout the first half. (Robert J. Heggie, vice president, A. M. Castle & Co., Chicago.

South—The expected upturn has not materialized. Specialty products are moving well. A source of concern is the wide range of products being imported. (Pollard Turman, president, J. M. Tull Metal & Supply Co. Inc., Atlanta.)

Texas — Business has improved since last fall. The oil industry is slow, but there's increased activity in the gas fields. One threat to continued improvement: Imports. (Robert K. Moses, president, McCormick Steel Co., Houston.)

Pacific Coast—Business has been getting better since last July. Most metalworking industries report improvement. The upswing will continue well into 1959. There will be little inventory building in California before Mar. 1, the effective date of a state inventory tax. (Wayne Rising, vice president, Ducommun Metals & Supply Co., Los Angeles.)

DISTRICT INGOT RATES

(Percentage of Capacity Engaged)

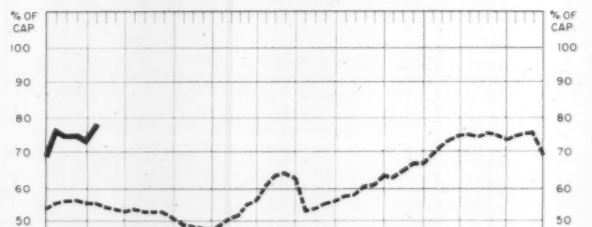
	Week Ended Feb. 1	Change	Same Week 1958	Same Week 1957
Pittsburgh	76	+ 6*	57	99.5
Chicago	85.5	+ 4*	56.5	96
Eastern	76	+ 1	74	98
Youngstown	67	+ 2	54	100
Wheeling	80	— 1	55	102.5
Cleveland	86.5	+ 7.5*	38	95
Buffalo	80.5	+ 9.5	53.5	105
Birmingham	72	+ 1.5	53	96.5
Cincinnati	89.5	+ 9.5*	55	90
St. Louis	96	+10.5*	74	99.5
Detroit	92.5	— 2.5	50.5	101.5
Western	85	+ 3	71	102
National Rate	78	+ 5.5*	55.5	96.5

INGOT PRODUCTION‡

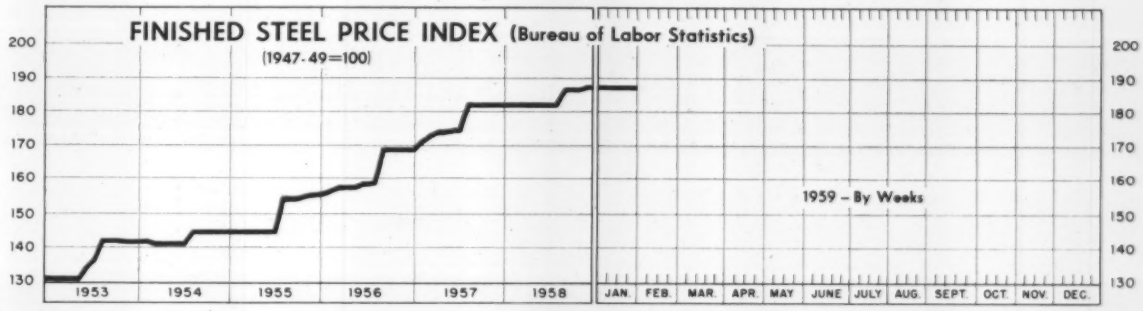
	Week Ended Feb. 1	Week Ago	Month Ago	Year Ago
INDEX (1947-49=100)	137.7†	128.0	128.1	90.8
NET TONS (In thousands)	2,212†	2,056	2,058	1,459

*Change from preceding week's revised rate †Estimated. ‡American Iron & Steel Institute. Weekly capacity (net tons): 2,831,331 in 1959; 2,699,173 in 1958; 2,559,490 in 1957.

NATIONAL STEELWORKS OPERATIONS



Price Indexes and Composites



Jan. 27, 1959	Week Ago	Month Ago	Dec. Avg	Year Ago
187.0	187.0	186.9	186.9	181.7

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended Jan. 27

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them, write to STEEL.

Rails, Standard No. 1	$5.825	Bars, Reinforcing	6.385
Rails, Light, 40 lb	7.292	Bars, C.F., Carbon	10.710
Tie Plates	6.875	Bars, C.F., Alloy	14.125
Axles, Railway	10.175	Bars, C.F., Stainless, 302 (lb)	0.570
Wheels, Freight Car, 33 in. (per wheel)	62.000	Sheets, H.R., Carbon	6.350
Plates, Carbon	6.350	Sheets, C.R., Carbon	7.300
Structural Shapes	6.167	Sheets, Galvanized	8.695
Bars, Tool Steel, Carbon (lb)	0.560	Sheets, C.R., Stainless, 302 (lb)	0.688
Bars, Tool Steel, Alloy, Oil Hardening Die (lb)	0.680	Sheets, Electrical	12.625
Bars, Tool Steel, H.R. Alloy, High Speed, W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.060 (lb)	1.400	Strip, C.R., Carbon	9.489
Bars, Tool Steel, H.R., Alloy, High Speed, W18, Cr 4, V 1 (lb)	1.895	Strip, C.R., Stainless, 430 (lb)	0.493
Bars, H.R., Alloy	10.775	Strip, H.R., Carbon	6.250
Bars, H.R., Stainless, 303 (lb)	0.543	Pipe, Black, Buttweld (100 ft)	19.908
Bars, H.R., Carbon	6.675	Pipe, Galv., Buttweld (100 ft)	23.583
		Pipe, Line (100 ft)	199.53
		Casing, Oil Well, Carbon (100 ft)	201.080
		Casing, Oil Well, Alloy (100 ft)	315.213
		Tubes, Boiler (100 ft)	51.200
		Tubing, Mechanical, Carbon (100 ft)	26.157
		Tubing, Mechanical, Stainless, 304 (100 ft)	205.608
		Tin Plate, Hot-dipped, 1.25 lb (95 lb base box)	10.100
		Tin Plate, Electrolytic, 0.25 lb (95 lb base box)	8.800
		Black Plate, Canmaking Quality (95 lb base box)	7.900
		Wire, Drawn, Carbon	10.575
		Wire, Drawn, Stainless 430 (lb)	0.665
		Bale Ties (bundles)	7.967
		Nails, Wire, 8d Common	9.828
		Wire, Barbed (80-rod spool)	8.719
		Woven Wire Fence (20-rod roll)	21.737

STEEL's FINISHED STEEL PRICE INDEX*

	Jan. 28 1959	Week Ago	Month Ago	Year Ago	5-Yr Ago
Index (1935-39 avg=100)	247.82	247.82	247.82	239.15	189.74
Index in cents per lb	6.713	6.713	6.713	6.479	5.140

STEEL's ARITHMETICAL COMPOSITES*

Finished Steel, NT	$149.96	$149.96	$149.96	$145.42	$113.91
No. 2 Fdry. Pig Iron, GT	66.49	66.49	66.49	66.49	56.54
Basic Pig Iron, GT	65.99	65.99	65.99	65.99	56.04
Malleable Pig Iron, GT	67.27	67.27	67.27	67.27	57.27
Steelmaking Scrap, GT	41.67	40.67	39.67	35.50	28.17

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL

	Jan. 28 1959	Week Ago	Month Ago	Year Ago	5-Yr Ago
Bars, H.R., Pittsburgh	5.675	5.675	5.675	5.425	4.15
Bars, H.R., Chicago	5.675	5.675	5.675	5.425	4.15
Bars, H.R., deld. Philadelphia	5.975	5.975	5.975	5.725	5.302
Bars, C.F., Pittsburgh	7.65*	7.65*	7.65*	7.30*	5.20
Shapes, Std., Pittsburgh	5.50	5.50	5.50	5.275	4.10
Shapes, Std., Chicago	5.50	5.50	5.50	5.275	4.10
Shapes, deld., Philadelphia	5.77	5.77	5.77	5.545	4.38
Plates, Pittsburgh	5.30	5.30	5.30	5.10	4.10
Plates, Chicago	5.30	5.30	5.30	5.10	4.10
Plates, Coatesville, Pa.	5.30	5.30	5.30	5.10	4.35
Plates, Sparrows Point, Md.	5.30	5.30	5.30	5.10	4.10
Plates, Claymont, Del.	5.30	5.30	5.30	5.10	4.55
Sheets, H.R., Pittsburgh	5.10	5.10	5.10	4.925	3.925
Sheets, H.R., Chicago	5.10	5.10	5.10	4.925	3.925
Sheets, C.R., Pittsburgh	6.275	6.275	6.275	6.05	4.775
Sheets, C.R., Chicago	6.275	6.275	6.275	6.05	4.775
Sheets, C.R., Detroit	6.275	6.275	6.275	6.05-6.15	4.975
Sheets, Galv., Pittsburgh	6.875	6.875	6.875	6.60	5.275
Strip, H.R., Pittsburgh	5.10	5.10	5.10	4.925	4.425
Strip, H.R., Chicago	5.10	5.10	5.10	4.925	3.925
Strip, C.R., Pittsburgh	7.425	7.425	7.425	7.15	5.45
Strip, C.R., Chicago	7.425	7.425	7.425	7.15	5.70
Strip, C.R., Detroit	7.425	7.425	7.425	7.25	5.45-6.05
Wire, Basic, Pittsburgh	8.00	8.00	8.00	7.65	5.525
Nails, Wire, Pittsburgh	8.95	8.95	8.95	8.95	6.55
Tin plate (1.50 lb) box, Pitts.	$10.65	$10.65	$10.65	$10.30	$8.95

*Including 0.35c for special quality.

SEMIFINISHED STEEL

Billets, forging, Pitts. (NT)	$99.50	$99.50	$99.50	$96.00	$75.50
Wire rods 7/32-9/16" Pitts.	6.40	6.40	6.40	6.15	4.525

PIG IRON, Gross Ton

	Jan. 28 1959	Week Ago	Month Ago	Year Ago	5-Yr Ago
Bessemer, Pitts.	$67.00	$67.00	$67.00	$67.00	$57.00
Basic, Valley	66.00	66.00	66.00	66.00	56.00
Basic, deld., Phila.	70.41	70.41	70.41	70.01	59.66
No. 2 Fdry, NevilleIsland, Pa.	66.50	66.50	66.50	66.50	56.50
No. 2 Fdry, Chicago	66.50	66.50	66.50	66.50	56.50
No. 2 Fdry, deld., Phila.	70.91	70.91	70.91	70.51	60.16
No. 2 Fdry, Birm.	62.50	62.50	62.50	62.50	52.88
No. 2 Fdry (Birm.) deld. Cin.	70.20	70.20	70.20	70.20	60.43
Malleable, Valley	66.50	66.50	66.50	66.50	56.50
Malleable, Chicago	66.50	66.50	66.50	66.50	56.50
Ferromanganese, net ton†	245.00	245.00	245.00	245.00	200.00

†74-76% Mn, Duquesne, Pa.

SCRAP, Gross Ton (Including broker's commission)

No. 1 Heavy Melt, Pittsburgh	$43.50	$43.50	$42.50	$33.50	$30.50
No. 1 Heavy Melt, E. Pa.	39.00	36.00	34.00	38.50	27.00
No. 1 Heavy Melt, Chicago	42.50	42.50	42.50	34.50	27.00
No. 1 Heavy Melt, Valley	46.50	43.50	42.50	30.50	29.50
No. 1 Heavy Melt, Cleve.	43.50	40.50	39.00	29.50	28.50
No. 1 Heavy Melt, Buffalo	35.50	35.50	33.50	28.50	25.00
Rails, Rerolling, Chicago	62.50	62.50	62.50	53.50	38.00
No. 1 Cast, Chicago	47.50	47.50	45.50	42.50	32.50

COKE, Net Ton

Beehive, Furn., Connlsvl.	$15.25	$15.25	$15.25	$15.25	$14.75
Beehive, Fdry., Connlsvl.	18.25	18.25	18.25	18.25	16.75
Oven, Fdry., Milwaukee	30.50	30.50	30.50	30.50	25.25

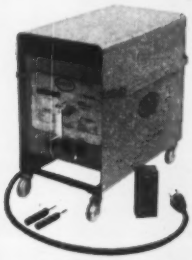
NEW — DC Aircomatic Fillerarc — motor generator type — for out-of-position Aircomatic welding and for obtaining superior welds with Pureco's welding grade CO_2. Available in 450 Ampere Model.

NEW POWER FOR WELDING

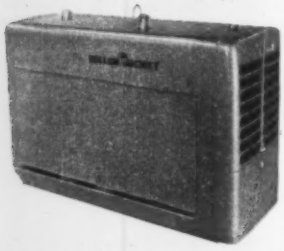
Behind the rise of weld-fabricated products—in manufacturing plants, on construction projects, in railroad shops, and shipyards, in thousands of small and large businesses from coast to coast—is the *power source* . . .

Air Reduction's arc welding machines are rugged, dependable, and designed to meet the power requirements of *any* arc welding job. Representative of the complete Airco line of many different power source combinations are five arc welders shown here.

NEW—AC/DC Heliwelder—engine driven type, air cooled—for inert-gas-shielded and metallic arc welding in the field. Available in 300 Ampere Model.



NEW—AC and AC/DC MSM Busybees—transformer type—for farm, ranch, garage, shop and general low-cost utility welding. Available in 180 Ampere Model.



DC Yellow Jacket—engine driven type, liquid cooled—for heavy duty steel construction in the field. Available in 300 and 400 Ampere Models.

DC Bumblebees — Rectifier type — for general industrial welding. Available in 200, 300, 400 and 600 Ampere Models.

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Steel Prices

Mill prices as reported to STEEL, Jan. 28, cents per pound except as otherwise noted. *Changes shown in italics.* Code number following mill points indicates producing company. Key to producers, page 128, footnotes, page 130.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)
Munhall,Pa. U5 .....$76.00

INGOTS, Alloy (NT)
Detroit S41 .....$82.00
Economy,Pa. B14 .....82.00
Farrell,Pa. S3 .....82.00
Lowellville,O. S3 .....82.00
Midland,Pa. C18 .....82.00
Munhall,Pa. U5 .....82.00
Sharon,Pa. S3 .....82.00

BILLETS, BLOOMS & SLABS Carbon, Rerolling (NT)
Bartonville,Ill. K4 ....$82.00
Bessemer,Pa. U5 ....80.00
Buffalo R2 .....80.00
Clairton,Pa. U5 .....80.00
Ensley,Ala. T2 .....80.00
Fairfield,Ala. T2 .....80.00
Fontana,Calif. K1 .....90.50
Gary,Ind. U5 .....80.00
Johnstown,Pa. B3 ....80.00
Lackawanna,N.Y. B2..80.00
Munhall,Pa. U5 .....80.00
Owensboro,Ky. G8 ....80.00
S.Chicago,Ill. R2, U5 ..80.00
S.Duquesne,Pa. U5 ....80.00
Sterling,Ill. N15 .....80.00
Youngstown R2 .....80.00

Carbon, Forging (NT)
Bessemer,Pa. U5 ....$99.50
Buffalo R2 .....99.50
Canton,O. R2 .....102.00
Clairton,Pa. U5 .....99.50
Conshohocken,Pa. A3..104.50
Ensley,Ala. T2 .....99.50
Fairfield,Ala. T2 .....99.50
Farrell,Pa. S3 .....99.50
Fontana,Calif. K1 ....109.00
Gary,Ind. U5 .....99.50
Geneva,Utah C11 .....99.50
Houston S5 .....104.50
Johnstown,Pa. B2 ....99.50
Lackawanna,N.Y. B2..99.50
LosAngeles B3 .....109.00
Midland,Pa. C18 .....99.50
Munhall,Pa. U5 .....99.50
Owensboro,Ky. G8 ....99.50
Seattle B3 .....113.00
Sharon,Pa. S3 .....99.50
S.Chicago R2, U5, W14..99.50
S.Duquesne,Pa. U5 ....99.50
S.SanFrancisco B3 ...109.00
Warren,O. C17 .....99.50

Alloy, Forging (NT)
Bethlehem,Pa. B2 ..$119.00
Bridgeport,Conn. C32..119.00
Buffalo R2 .....119.00
Canton,O. R2, T7 ....119.00
Conshohocken,Pa. A3..126.00
Detroit S41 .....119.00
Economy,Pa. B14 ....119.00
Farrell,Pa. S3 .....119.00
Fontana,Calif. K1 ....140.00
Gary,Ind. U5 .....119.00
Houston S5 .....124.00
Ind.Harbor,Ind. Y1 ..119.00
Johnstown,Pa. B2 ....119.00
Lackawanna,N.Y. B2..119.00
LosAngeles B3 .....139.00
Lowellville,O. S3 ....119.00
Massillon,O. R2 .....119.00
Midland,Pa. C18 .....119.00
Munhall,Pa. U5 .....119.00
Owensboro,Ky. G8 ....119.00
Sharon,Pa. S3 .....119.00
S.Chicago R2,U5,W14..119.00
S.Duquesne,Pa. U5 ....119.00
Struthers,O. Y1 .....119.00
Warren,O. C17 .....119.00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 .....$122.50
Canton,O. R2 .....125.00
Cleveland R2 .....122.50
Gary,Ind. U5 .....122.50
S.Chicago,Ill. R2, W14 122.50
S.Duquesne,Pa. U5 ...122.50
Warren,O. C17 .....122.50

SKELP
Aliquippa,Pa. J5 .....5.05
Munhall,Pa. U5 .....5.05
Pittsburgh J5 .....5.05
Warren,O. R2 .....5.05
Youngstown R2, U5 ....5.05

WIRE RODS
AlabamaCity,Ala. R2 ..6.40
Aliquippa,Pa. J5 .....6.40
Alton,Ill. L1 .....6.60
Bartonville,Ill. K4 ....6.50
Buffalo W12 .....6.40
Cleveland A7 .....6.40
Donora,Pa. A7 .....6.40
Fairfield,Ala. T2 .....6.40
Houston S5 .....6.65
IndianaHarbor,Ind. Y1..6.40
Johnstown,Pa. B2 ....6.40
Joliet,Ill A7 .....6.40
KansasCity,Mo. S5 ....6.65
Kokomo,Ind. C16 .....6.50
LosAngeles B3 .....7.20
Minnequa,Colo. C10 ....6.65
Monessen,Pa. P7 ....6.40
N.Tonawanda,N.Y. B11 ..6.40
Pittsburg,Calif. C11 ....7.20
Portsmouth,O. P12 ....6.40
Roebling,N.J. R5 .....6.50
S.Chicago,Ill. R2, W14..6.40
SparrowsPoint,Md. B2 ..6.50
Sterling,Ill.(1) N15 ....6.40
Sterling,Ill. N15 .....6.50
Struthers,O. Y1 .....6.40
Worcester,Mass. A7 ....6.70

STRUCTURALS

Carbon Steel Std. Shapes
AlabamaCity,Ala. R2 ..5.50
Aliquippa,Pa. J5 .....5.50
Atlanta A11 .....5.70
Bessemer,Ala. T2 .....5.50
Bethlehem,Pa. B2 .....5.55
Birmingham C15 .....5.50
Clairton,Pa. U5 .....5.50
Fairfield,Ala. T2 .....5.50
Fontana,Calif. K1 .....6.30
Gary,Ind. U5 .....5.50
Geneva,Utah C11 .....5.50
Houston S5 .....5.60
Ind.Harbor,Ind. I-2, Y1..5.50
Johnstown,Pa. B2 .....5.55
Joliet,Ill. P22 .....5.50
KansasCity,Mo. S5 ....5.60
Lackawanna,N.Y. B2 ..5.55
LosAngeles B3 .....6.20
Minnequa,Colo. C10 ....5.80
Munhall,Pa. U5 .....5.50
Niles,Calif. P1 .....6.25
Phoenixville,Pa. P4 ....5.55
Portland,Oreg. O4 ....6.25
Seattle B3 .....6.25
S.Chicago,Ill. U5, W14..5.50
S.SanFrancisco B3 ....6.15
Sterling,Ill. N15 .....5.50
Torrance,Calif. C11 ....6.20
Weirton,W.Va. W6 ....5.50

Wide Flange
Bethlehem,Pa. B2 .....5.55
Clairton,Pa. U5 .....5.50
Fontana,Calif. K1 .....6.45
IndianaHarbor,Ind. I-2..5.50
Lackawanna,N.Y. B2 ..5.55
Munhall,Pa. U5 .....5.50
Phoenixville,Pa. P4 ....5.55
S.Chicago,Ill. U5 .....5.50
Weirton,W.Va. W6 ....5.50

Alloy Std. Shapes
Aliquippa,Pa. J5 .....6.80
Clairton,Pa. U5 .....6.80
Gary,Ind. U5 .....6.80
Houston S5 .....6.90
Munhall,Pa. U5 .....6.80
S.Chicago,Ill. U5, W14..6.80

H.S., L.A., Std. Shapes
Aliquippa,Pa. J5 .....8.05
Bessemer,Ala. T2 .....8.05
Bethlehem,Pa. B2 .....8.10
Clairton,Pa. U5 .....8.05
Fairfield,Ala. T2 .....8.05
Fontana,Calif. K1 .....8.85
Gary,Ind. U5 .....8.05
Geneva,Utah C11 .....8.05
Houston S5 .....8.15
Ind.Harbor,Ind. I-2, Y1..8.05
Johnstown,Pa. B2 .....8.10
KansasCity,Mo. S5 ....8.15
Lackawanna,N.Y. B2 ..8.10
LosAngeles P3 .....8.75
Munhall,Pa. U5 .....8.05
Seattle B3 .....8.80
S.Chicago,Ill. U5, W14..8.05
S.SanFrancisco B3 ....8.70
Struthers,O. Y1 .....8.05

H. S., L.A. Wide Flange
Bethlehem,Pa. B2 .....8.10
Ind.Harbor,Ind. I-2 ....8.05
Lackawanna,N.Y. B2 ..8.10
Munhall,Pa. U5 .....8.05
S.Chicago,Ill. U5 .....8.05

PILING

BEARING PILES
Bethlehem,Pa. B2 .....5.55
Ind.Harbor,Ind. I-2 ....5.50
Lackawanna,N.Y. B2 ..5.55
Munhall,Pa. U5 .....5.50
S.Chicago,Ill. I-2, U5 ..5.50

STEEL SHEET PILING
Ind.Harbor,Ind. I-2 ....6.50
Lackawanna,N.Y. B2 ..6.50
Munhall,Pa. U5 .....6.50
S.Chicago,Ill. I-2 U5 ..6.50
Weirton,W.Va. W6 ....6.50

PLATES

PLATES, Carbon Steel
AlabamaCity,Ala. R2 ..5.30
Aliquippa,Pa. J5 .....5.30
Ashland,Ky. A10 .....5.30
Bessemer,Ala. T2 .....5.30
Clairton,Pa. U5 .....5.30
Claymont,Del. C22 ....5.30
Cleveland J5, R2 ....5.30
Coatesville,Pa. L7 ....5.30
Conshohocken,Pa. A3 ..5.30
Ecorse,Mich. G5 .....5.30
Fairfield,Ala. T2 .....5.30
Farrell,Pa. S3 .....5.30
Fontana,Calif.(30) K1 ..6.10
Gary,Ind. U5 .....5.30
Geneva,Utah C11 .....5.30
GraniteCity,Ill. G4 ....5.40
Harrisburg,Pa. P4 ....5.30
Houston S5 .....5.40
Ind.Harbor,Ind. I-2, Y1..5.30
Johnstown,Pa. B2 .....5.30
Lackawanna,N.Y. B2 ..5.30
Mansfield,O. E6 .....5.30
Minnequa,Colo. C10 ....6.15
Munhall,Pa. U5 .....5.30
Newport,Ky. A2 .....5.30
Pittsburgh J5 .....5.30
Riverdale,Ill. A1 .....5.30
Seattle B3 .....6.20
Sharon,Pa. S3 .....5.30
S.Chicago,Ill. U5, W14..5.30
SparrowsPoint,Md. B2..5.30
Sterling,Ill. N15 .....5.30
Steubenville,O. W10 ....5.30
Warren,O. R2 .....5.30
Youngstown U5, Y1 ....5.30
Youngstown(27) R2 ....5.30

PLATES, Carbon Abras. Resist.
Claymont,Del. C22 ....7.05
Fontana,Calif. K1 .....7.85
Geneva,Utah C11 .....7.05
Houston S5 .....7.15
Johnstown,Pa. B2 .....7.05
SparrowsPoint,Md. B2 ..7.05

PLATES, Wrought Iron
Economy,Pa. B14 ....13.55

PLATES, H.S., L.A.
Aliquippa,Pa. J5 .....7.95
Ashland,Ky. A10 .....7.95
Bessemer,Ala. T2 .....7.95
Clairton,Pa. U5 .....7.95
Claymont,Del. C22 ....7.95
Cleveland J5, R2 .....7.95
Coatesville,Pa. L7 ....7.95
Conshohocken,Pa. A3 ..7.95
Economy,Pa. B14 .....7.95
Ecorse,Mich. G5 .....7.95
Fairfield,Ala. T2 .....7.95
Farrell,Pa. S3 .....7.95
Fontana,Calif.(30) K1 ..8.75
Gary,Ind. U5 .....7.95
Geneva,Utah C11 .....7.95
Houston S5 .....8.05
Ind.Harbor,Ind. I-2, Y1..7.95
Johnstown,Pa. B2 .....7.95
Munhall,Pa. U5 .....7.95
Pittsburgh J5 .....7.95
Seattle B3 .....8.85
Sharon,Pa. S3 .....7.95
S.Chicago,Ill. U5, W14..7.95
SparrowsPoint,Md. B2 ..7.95
Warren,O. R2 .....7.95
Youngstown U5, Y1 ....7.95

PLATES, ALLOY
Aliquippa,Pa. J5 .....7.50
Claymont,Del. C22 ....7.50
Coatesville,Pa. L17 ....7.50
Economy,Pa. B14 .....7.50
Farrell,Pa. S3 .....7.50
Fontana,Calif. K1 .....8.30
Gary,Ind. U5 .....7.50
Houston S5 .....7.60
Ind.Harbor,Ind. Y1 ....7.50
Johnstown,Pa. B2 .....7.50
Lowellville,O. S3 .....7.50
Munhall,Pa. U5 .....7.50
Newport,Ky. A2 .....7.50
Pittsburgh J5 .....7.50
Seattle B3 .....8.40
Sharon,Pa. S3 .....7.50
S.Chicago,Ill. U5, W14..7.50
SparrowsPoint,Md. B2..7.50
Youngstown Y1 .....7.50

FLOOR PLATES
Cleveland J5 .....6.375
Conshohocken,Pa. A3 ..6.375
Ind.Harbor,Ind. I-2 ....6.375
Munhall,Pa. U5 .....6.375
Pittsburgh J5 .....6.375
S.Chicago,Ill. U5 .....6.375

PLATES, Ingot Iron
Ashland c.l.(15) A10 ..5.55
Ashland l.c.l.(15) A10 ..6.05
Cleveland c.l. R2 .....6.05
Warren,O. c.l. R2 .....6.05

BARS

BARS, Hot-Rolled Carbon (Merchant Quality)
Ala.City,Ala.(9) R2 ..5.675
Aliquippa,Pa.(9) J5 ..5.675
Alton,Ill. L1 .....5.875
Atlanta(9) A11 .....5.875
Bessemer,Ala.(9) T2 ..5.675
Birmingham(9) C15 ..5.675
Buffalo(9) R2 .....5.675
Canton,O.(23) R2 .....6.15
Clairton,Pa.(9) U5 ....5.675
Cleveland(9) R2 .....5.675
Ecorse,Mich.(9) G5 ....5.675
Emeryville,Calif. J7 ..6.425
Fairfield,Ala.(9) T2 ..5.675
Fairless,Pa.(9) U5 ....5.825
Fontana,Calif.(9) K1 ..6.375
Gary,Ind.(9) U5 .....5.675
Houston(9) S5 .....5.925
Ind.Harbor(9) I-2, Y1..5.675
Johnstown,Pa.(9) B2 ..5.675
Joliet,Ill. P22 .....5.675
KansasCity,Mo.(9) S5 ..5.925
Lackawanna(9) B2 .....5.675
LosAngeles(9) B3 .....6.375
Massillon,O.(23) R2 ....6.15
Midland,Pa.(23) C18 ....6.025
Milton,Pa. M18 .....5.825
Minnequa,Colo. C10 ....6.125
Niles,Calif. P1 .....6.375
N.T'wan'a,N.Y.(23)B11 6.025
Owensboro,Ky.(9) G8 ....6.025
Pittsburg,Calif.(9) C11..6.375
Pittsburgh(9) J5 .....5.675
Portland,Oreg. O4 .....6.425
Riverdale,Ill.(9) A1 ....5.675
Seattle B3, N14 .....6.425
S.Ch'e'go(9)R2,U5,W14 5.675
S.Duquesne,Pa.(9) U5 ..5.675
S.SanFran.,Calif.(9) B3 6.425
Sterling,Ill.(1)(9) N15..5.675
Sterling,Ill.(9) N15 ....5.775
Struthers,O.(9) Y1 .....5.675
Tonawanda,N.Y. B12 ....5.675
Torrance,Calif.(9) C11..6.375
Warren,O. C17 .....6.025
Youngstown(9) R2, U5..5.675

BARS, Hot-Rolled Alloy
Aliquippa,Pa. J5 .....6.725
Bethlehem,Pa. B2 .....6.725
Bridgeport,Conn. C32 ..6.80
Buffalo R2 .....6.725
Canton,O. R2, T7 .....6.725
Clairton,Pa. U5 .....6.725
Detroit S41 .....6.725
Economy,Pa. B14 .....6.725
Ecorse,Mich. G5 .....6.725
Fairless,Pa. U5 .....6.875
Farrell,Pa. S3 .....6.725
Fontana,Calif. K1 .....7.775
Gary,Ind. U5 .....6.725
Houston S5 .....6.975
Ind.Harbor,Ind. I-2, Y1..6.725
Johnstown,Pa. B2 .....6.725
KansasCity,Mo. S5 .....6.975
Lackawanna,N.Y. B2..6.725
LosAngeles B3 .....7.775
Lowellville,O. S3 .....6.725
Massillon,O. R2 .....6.725
Midland,Pa. C18 .....6.725
Owensboro,Ky. G8 .....6.725
Pittsburgh J5 .....6.725
Sharon,Pa. S3 .....6.725
S.Chicago R2, U5, W14 6.725
S.Duquesne,Pa. U5 ....6.725
Struthers,O. Y1 .....6.725
Warren,O. C17 .....6.725
Youngstown U5 .....6.725

BARS & SMALL SHAPES, H.R. High-Strength, Low-Alloy
Aliquippa,Pa. J5 .....8.30
Bessemer,Ala. T2 .....8.30
Bethlehem,Pa. B2 .....8.30
Clairton,Pa. U5 .....8.30
Cleveland R2 .....8.30
Ecorse,Mich. G5 .....8.30
Fairfield,Ala. T2 .....8.30
Fontana,Calif. K1 .....9.00
Gary,Ind. U5 .....8.30
Houston S5 .....8.55
Ind.Harbor,Ind. Y1 ....8.30
Johnstown,Pa. B2 .....8.30
KansasCity,Mo. S5 .....8.55
Lackawanna,N.Y. B2 ..8.30
LosAngeles B3 .....9.00
Pittsburgh J5 .....8.30
Seattle B3 .....9.05
S.Chicago,Ill. R2, W14..8.30
S.Duquesne,Pa. U5 ....8.30
S.SanFrancisco B3 ....9.05
Struthers,O. Y1 .....8.30
Youngstown U5 .....8.30

BAR SIZE ANGLES: H.R. Carbon
Bethlehem,Pa.(9) B2 ..5.825
Houston(9) S5 .....5.925
KansasCity,Mo.(9) S5..5.925
Lackawanna(9) B2 .....5.675
Sterling Ill. N15 .....5.775
Sterling,Ill.(1) N15 ....5.675
Tonawanda,N.Y. B12 ....5.675

BAR SIZE ANGLES: S. Shapes
Aliquippa,Pa. J5 .....5.675
Atlanta A11 .....5.875
Joliet,Ill. P22 .....5.675
Minnequa,Colo. C10 ....6.125
Niles, Calif. P1 .....6.375
Pittsburgh J5 .....5.675
Portland,Oreg. O4 ....6.425
SanFrancisco S7 .....6.52
Seattle B3 .....6.425

BAR SHAPES, Hot-Rolled Alloy
Aliquippa,Pa. J5 .....6.80
Clairton,Pa. U5 .....6.80
Gary,Ind. U5 .....6.80
Houston S5 .....7.05
KansasCity,Mo. S5 .....7.05
Pittsburgh J5 .....6.80
Youngstown U5 .....6.80

BARS, C.F. Leaded (Including leaded extra)
Carbon
LosAngeles P2, S30 ..11.75*

Alloy
Ambridge,Pa. W18 ..10.175
BeaverFalls,Pa. M12 ..10.175
Camden,N.J. P13 ....10.35
Chicago W18 .....10.175
Elyria,O. W8 .....10.175
Monaca,Pa. S17 .....10.175
Newark,N.J. W18 ....10.35
SpringCity,Pa. K3 ....10.35

*Grade A; add 0.050c for Grade B.

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 .....7.65
BeaverFalls,Pa. M12,R2..7.65
Birmingham C15 .....8.25
Buffalo B5 .....7.70
Camden,N.J. P13 .....8.10
Carnegie,Pa. C12 .....7.65
Chicago W18 .....7.65
Cleveland A7, C20 .....7.65
Detroit B5, P17 .....7.85
Detroit S41 .....7.65
Donora,Pa. A7 .....7.65
Elyria,O. W8 .....7.65
FranklinPark,Ill. N5 ....7.65
Gary,Ind. R2 .....7.65
GreenBay,Wis. F7 .....7.65
Hammond,Ind. J5, L2 ..7.65
Hartford,Conn. R2 .....8.15
Harvey,Ill. B5 .....7.65
LosAngeles(49) S30 ....9.10
LosAngeles(49) P2, R2..9.10
Mansfield,Mass. B2 ....8.20
Massillon,O. R2, R8 ....7.65
Midland,Pa. C18 .....7.65
Monaca,Pa. S17 .....7.65
Newark,N.J. W18 .....8.10
NewCastle,Pa.(17) B4 ..7.65
Pittsburgh J5 .....7.65
Plymouth,Mich. P5 .....7.90
Putnam,Conn. W18 ....8.20
Readville,Mass. C14 ..8.20
S.Chicago,Ill. W14 ....7.65
SpringCity,Pa. K3 .....8.10
Struthers,O. Y1 .....7.65
Warren,O. C17 .....7.65
Waukegan,Ill. A7 .....7.65
Willimantic,Conn. J5 ..8.15
Youngstown F3, Y1 ....7.65

BARS, Cold-Finished Carbon (Turned and Ground)
Cumberland,Md. (5) C19..6.55

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 .....9.025
BeaverFalls,Pa. M12,R2..9.025
Bethlehem,Pa. B2 .....9.025
Bridgeport,Conn. C32 ..9.175
Buffalo B5 .....9.20
Camden,N.J. P13 .....9.20
Canton,O. T7 .....9.025
Carnegie,Pa. C12 .....9.025
Chicago W18 .....9.025
Cleveland A7, C20 .....9.025
Detroit B5, P17 .....9.225
Detroit S41 .....9.025
Donora,Pa. A7 .....9.025
Elyria,O. W8 .....9.025
FranklinPark,Ill. N5 ....9.025
Gary,Ind. R2 .....9.025
GreenBay,Wis. F7 .....9.025
Hammond,Ind. J5, L2 ..9.025
Hartford,Conn. R2 .....9.325
Harvey,Ill. B5 .....9.025
Lackawanna,N.Y. B2 ....9.025
LosAngeles P2, S30 ...11.00
Mansfield,Mass. B5 ....9.325
Massillon,O. R2, R8 ....9.025
Midland,Pa. C18 .....9.025
Monaca,Pa. S17 .....9.025
Newark,N.J. W18 .....9.20
Plymouth,Mich. P5 .....9.225
S.Chicago,Ill. W14 .....9.025
SpringCity,Pa. K3 .....9.20
Struthers,O. Y1 .....9.025
Warren,O. C17 .....9.025
Waukegan,Ill A7 .....9.025
Willimantic,Conn. J5 ..9.325
Worcester,Mass. A7 ....9.325
Youngstown F3, Y1 ....9.025

BARS, Reinforcing, Billet (To Fabricators)

AlabamaCity,Ala. R2 ..5.675
Atlanta A11 .....5.675
Birmingham C15 .....5.675
Buffalo R2 .....5.675
Cleveland R2 .....5.675
Ecorse,Mich. G5 .....5.675
Emeryville,Calif. J7 ..6.425
Fairfield,Ala. T2 .....5.675
Fairless,Pa. U5 .....5.825
Fontana,Calif. K1 .....6.375
Ft.Worth,Tex(4)(26)T4 5.925
Gary,Ind. U5 .....5.675
Houston S5 .....5.925
Ind.Harbor,Ind. I-2, Y1 5.675
Johnstown,Pa. B2 .....5.675
Joliet,Ill. P22 .....5.675
KansasCity,Mo. S5 ...5.925
Kokomo,Ind. C16 .....5.775
Lackawanna,N.Y. B2 ..5.675
LosAngeles B3 .....6.375
Madison,Ill. L1 .....5.875
Milton,Pa. M18 .....5.825
Minnequa,Colo. C10 ...6.125
Niles,Calif. P1 .....6.375
Pittsburg,Calif. C11 ...6.375
Pittsburgh J5 .....5.675
Portland,Oreg. O4 .....6.425
SandSprings,Okla. S5 ..5.925
Seattle B3, N14 .....6.425
S.Chicago,Ill. R2, W14 .5.675
S.Duquesne,Pa. U5 ....5.675
S.SanFrancisco B3 ....6.425
SparrowsPoint,Md. B2. .5.675
Sterling,Ill.(1) N15 ....5.675
Sterling,Ill. N15 .....5.775
Struthers,O. Y1 .....5.675
Tonawanda,N.Y. B12 ...6.10
Torrance,Calif. C11 ...6.375
Youngstown R2, U5 ...5.675

BARS, Reinforcing, Billet (Fabricated; to Consumers)

Baltimore B2 .....7.42
Boston B2, U8 .....8.15
Chicago U8 .....7.41
Cleveland U8 .....7.39
Houston S5 .....7.60
Johnstown,Pa. B2 .....7.33
KansasCity,Mo. S5 ....7.60
Lackawanna,N.Y. B2 ..7.35
Marion,O. P11 .....6.70
Newark,N.J. U8 .....7.80
Philadelphia U8 .....7.63
Pittsburgh J5, U8 .....7.35
SandSprings,Okla. S5 ...7.60
Seattle B3, N14 .....7.95
SparrowsPt.,Md. B2 ....7.33
St. Paul U8 .....8.17
Williamsport,Pa. S19 ...7.25

BARS, Wrought Iron

Economy,Pa.(S.R.)B14 14.90
Economy,Pa.(D.R.)B14 18.55
Economy(Staybolt)B14 19.00
McK.Rks.(S.R.) L5 ...14.50
McK.Rks.(D.R.) L5 ...19.80
McK.Rks.(Staybolt) L5 20.95

BARS, Rail Steel

ChicagoHts.(3) C2, I-2 5.575
ChicagoHts.(4) (44) I-2 5.675
ChicagoHts.(4) C2 ....5.675
Franklin,Pa.(3) F5 ....5.575
Franklin,Pa.(4) F5 ....5.675
JerseyShore,Pa.(3) J8 ..5.55
Marion,O.(3) P11 .....5.575
Tonawanda(3) B12 .....5.575
Tonawanda(4) B12 .....6.10

SHEETS

SHEETS, Hot-Rolled Steel (18 Gage and Heavier)

Lackawanna,N.Y. B2 ..5.10
Allenport,Pa. P7 .....5.10
Aliquippa,Pa. J5 .....5.10
Ashland,Ky.(8) A10 ....5.10
Cleveland J5, R2 .....5.10
Conshohocken,Pa. A3 ...5.15
Detroit(8) M1 .....5.10
Ecorse,Mich. G5 .....5.10
Fairfield,Ala. T2 .....5.10
Fairless,Pa. U5 .....5.15
Farrell,Pa. S3 .....5.10
Fontana,Calif. K1 .....5.825
Gary,Ind. U5 .....5.10
Geneva,Utah C11 .....5.20
GraniteCity,Ill.(8) G4 ..5.20
Ind.Harbor,Ind. I-2, Y1.5.10
Irvin,Pa. U5 .....5.10
Lackawanna,N.Y. B2 ..5.10
Mansfield,O. E6 .....5.10
Munhall,Pa. U5 .....5.10
Newport,Ky. A2 .....5.10
Niles,O. M21, S3 .....5.10
Pittsburg,Calif. C11 ....5.80
Pittsburgh J5 .....5.10
Portsmouth,O. P12 .....5.10
Riverdale,Ill. A1 .....5.10
Sharon,Pa. S3 .....5.10
S.Chicago,Ill. U5, W14..5.10
SparrowsPoint,Md. B2 ..5.10
Steubenville,O. W10 ....5.10
Warren,O. R2 .....5.10
Weirton,W.Va. W6 .....5.10
Youngstown U5, Y1 ....5.10

SHEETS, H.R. (19 Ga. & Lighter)

Niles,O. M21, S3 .....6.275

SHEETS, H.R. Alloy

Gary,Ind. U5 .....8.40
Ind.Harbor,Ind. Y1 ....8.40
Irvin,Pa. U5 .....8.40
Munhall,Pa. U5 .....8.40
Newport,Ky. A2 .....8.40
Youngstown U5, Y1 ....8.40

SHEETS, H.R. (14 Ga. & Heavier) High-Strength, Low-Alloy

Aliquippa,Pa. J5 .....7.525
Ashland,Ky. A10 .....7.525
Cleveland J5, R2 .....7.525
Conshohocken,Pa. A3 ..7.575
Ecorse,Mich. G5 .....7.525
Fairfield Ala. T2 .....7.525
Fairless,Pa. U5 .....7.575
Farrell,Pa. S3 .....7.525
Fontana,Calif. K1 .....8.25
Gary,Ind. U5 .....7.525
Ind.Harbor,Ind. I-2, Y1.7.525
Irvin,Pa. U5 .....7.525
Lackawanna(35) B2 ...7.525
Munhall,Pa. U5 .....7.525
Niles,O. S3 .....7.525
Pittsburgh J5 .....7.525
S.Chicago,Ill. U5, W14.7.525
Sharon,Pa. S3 .....7.525
SparrowsPoint(36) B2..7.525
Warren,O. R2 .....7.525
Weirton,W.Va. W6 ....7.525
Youngstown U5, Y1 ...7.525

SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)

Ashland,Ky.(8) A10 ....5.35
Cleveland R2 .....5.875
Warren,O. R2 .....5.875

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2 .....7.05
Middletown,O. A10 ....6.775
Warren,O. R2 .....7.05

SHEETS, Cold-Rolled Steel (Commercial Quality)

AlabamaCity,Ala. R2 ..6.275
Allenport,Pa. P7 .....6.275
Aliquippa,Pa. J5 .....6.275
Cleveland J5, R2 .....6.275
Conshohocken,Pa. A3 ..6.325
Detroit M1 .....6.275
Ecorse,Mich. G5 .....6.275
Fairfield,Ala. T2 .....6.275
Fairless,Pa. U5 .....6.325
Follansbee,W.Va. F4 ..6.275
Fontana,Calif. K1 .....7.40
Gary,Ind. U5 .....6.275
GraniteCity,Ill. G4 ....6.375
Ind.Harbor,Ind. I-2, Y1.6.275
Irvin,Pa. U5 .....6.275
Lackawanna,N.Y. B2 ..6.275
Mansfield,O. E6 .....6.275
Middletown,O. A10 ....6.275
Newport,Ky. A2 .....6.275
Pittsburg,Calif. C11 ...7.225
Pittsburgh J5 .....6.275
Portsmouth,O. P12 ....6.275
SparrowsPoint,Md. B2..6.275
Steubenville,O. W10 ...6.275
Warren,O. R2 .....6.275
Weirton,W.Va. W6 ....6.275
Youngstown Y1 .....6.275

SHEETS, Cold-Rolled, High-Strength, Low-Alloy

Aliquippa,Pa. J5 .....9.275
Cleveland J5, R2 .....9.275
Ecorse,Mich. G5 .....9.275
Fairless,Pa. U5 .....9.325
Fontana,Calif. K1 ....10.40
Gary,Ind. U5 .....9.275
Ind.Harbor,Ind. I-2, Y1.9.275
Lackawanna(37) B2 ...9.275
Pittsburgh J5 .....9.275
SparrowsPoint(38) B2..9.275
Warren,O. R2 .....9.275
Weirton,W.Va. W6 ....9.275
Youngstown Y1 .....9.275

SHEETS, Culvert	Cu Steel	Cu Fe
Ala.City,Ala. R2	7.225	....
Ashland,Ky. A10	7.225	7.475
Canton,O. R2	7.225	7.75
Fairfield T2	7.225	7.475
Gary,Ind. U5	7.225	7.475
GraniteCity,Ill.G4	7.325	....
Ind.Harbor I-2	7.225	7.475
Irvin,Pa. U5	7.225	7.475
Kokomo,Ind. C16	7.325	....
MartinsFry. W10	7.225	7.475
Pitts.,Calif. C11	7.975	....
SparrowsPt. B2	7.225	....
Pittsburgh J5	7.225	....

SHEETS, Culvert—Pure Iron

Ind.Harbor,Ind. I-2 ...7.475

SHEETS, Galvanized Steel Hot-Dipped

AlabamaCity,Ala. R2 .6.875‡
Ashland,Ky. A10 ....6.875†
Canton,O. R2 .....6.875‡
Dover,O. E6 .....6.875†
Fairfield,Ala. T2 ....6.875†
Gary,Ind. U5 .....6.875†
GraniteCity,Ill. G4 ...6.975*
Ind.Harbor,Ind. I-2 ..6.875†
Irvin,Pa. U5 .....6.875†
Kokomo,Ind. C16 .....6.975‡
MartinsFerry,O. W10 .6.875*
Middletown,O. A10 ...6.875†
Pittsburg,Calif. C11 ...7.625*
Pittsburgh J5 .....6.875†
SparrowsPt.,Md. B2 ..6.875†
Warren,O. R2 .....6.875†
Weirton,W.Va. W6 ....6.875*

*Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

SHEETS, Well Casing

Fontana,Calif. K1 ....7.325

SHEETS, Galvanized High-Strength, Low-Alloy

Irvin,Pa. U5 .....10.125
SparrowsPt.(39) B2 ..10.025
Pittsburgh J5 .....10.125

SHEETS, Galvannealed Steel

Canton,O. R2 .....7.275
Irvin,Pa. U5 .....7.275

SHEETS, Galvanized Ingot Iron (Hot-Dipped Continuous)

Ashland,Ky. A10 .....7.125
Middletown,O. A10 ....7.125

SHEETS, Electrogalvanized

Cleveland(28) R2 .....7.65
Niles,O.(28) R2 .....7.65
Youngstown J5 .....7.50
Weirton,W.Va. W6 .....7.50

SHEETS, Aluminum Coated

Butler,Pa. A10 (type 1) 9.525
Butler,Pa. A10 (type 2) 9.625

SHEETS, Enameling Iron

Ashland,Ky. A10 .....6.775
Cleveland R2 .....6.775
Fairfield,Ala. T2 .....6.775
Gary,Ind. U5 .....6.775
GraniteCity,Ill. G4 ....6.875
Ind.Harbor,Ind. I-2, Y1 6.775
Irvin,Pa. U5 .....6.775
Middletown,O. A10 ....6.775
Niles,O. M21, S3 .....6.775
Youngstown Y1 .....6.775

BLUED STOCK, 29 Gage

Dover,O. E6 .....8.70
Follansbee,W.Va. F4 ...8.70
Ind.Harbor,Ind. I-2 ....8.70
Mansfield,O. E6 .....8.70
Warren,O. R2 .....8.70
Yorkville,O. W10 .....8.70

SHEETS, Long Terne, Steel (Commercial Quality)

BeechBottom,W.Va.W10 7.225
Gary,Ind. U5 .....7.225
Mansfield,O. E6 .....7.225
Middletown,O. A10 ....7.225
Niles,O. M21, S3 .....7.225
Warren,O. R2 .....7.225
Weirton,W.Va. W6 ....7.225

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 ....7.625

Key To Producers

A1 Acme Steel Co.
A2 Acme-Newport Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Div., H. K. Porter Co., Inc.
A6 American Shim Steel Co.
A7 American Steel & Wire Div., U. S. Steel Corp.
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke, Wickwire Spencer Steel Div., Colo. Fuel & Iron
B11 Buffalo Bolt Co., Div., Buffalo Eclipse Corp.
B12 Buffalo Steel Corp.
B14 A. M. Byers Co.
B15 J. Bishop & Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C15 Connors Steel Div., H. K. Porter Co. Inc.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Clayment Plant, Wickwire Spencer Steel Div., Colo. Fuel & Iron
C23 Charter Wire Inc.
C24 G. O. Carlson Inc.
C32 Carpenter Steel of N.Eng.

D2 Detroit Steel Corp.
D4 Disston Div., H. K. Porter Co. Inc.
D6 Driver-Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.

E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E5 Elliott Bros. Steel Co.
E6 Empire-Reeves Steel Corp.
E10 Enamel Prod. & Plating

F2 Firth Sterling Inc.
F3 Fitzsimmons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.

G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.
G8 Green River Steel Corp.

H1 Hanna Furnace Corp.
H7 Helical Tube Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins Steel Tube Works
I-7 Indiana Steel & Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L6 Lone Star Steel Co.
L7 Lukens Steel Co.
L8 Leschen Wire Rope Div., H. K. Porter Co. Inc.

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M14 McInnes Steel Co.
M16 Md. Fine & Special. Wire
M17 Metal Forming Corp.
M18 Milton Steel Div., Merritt-Chapman&Scott
M21 Mallory-Sharon Metals Corp.
M22 Mill Strip Products Co.

N1 National-Standard Co.
N2 National Supply Co.
N3 National Tube Div., U. S. Steel Corp.
N5 Nelsen Steel & Wire Co.
N6 New England High Carbon Wire Co.
N8 Newman-Crosby Steel
N14 Northwest. Steel Rolling Mills Inc.
N15 Norwestern S.&W. Co.
N20 Neville Ferro Alloy Co.

O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Steel Corp., Sub. of Barium Steel Corp.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Div., Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., American Chain & Cable
P17 Plymouth Steel Corp.
P19 Pitts. Rolling Mills
P20 Prod. Steel Strip Corp.
P22 Phoenix Mfg. Co.
P24 Phil. Steel & Wire Corp.

R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R8 Reliance Div., Eaton Mfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Div., Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S17 Superior Drawn Steel Co.
S18 Superior Steel Div., Copperweld Steel Co.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless Welded Prod.
S26 Specialty Wire Co. Inc.
S30 Sierra Drawn Steel Corp.
S40 Seneca Steel Service
S41 Stainless & Strip Div., J&L Steel Corp.
S42 Southern Elec. Steel Co.

T2 Tenn. Coal & Iron Div., U. S. Steel Corp.
T3 Tenn. Products & Chemical Corp.
T4 Texas Steel Co.
T5 Thomas Strip Div., Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.
T13 Tube Methods Inc.
T19 Techalloy Co. Inc.

U3 Union Wire Rope Corp.
U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
U7 Ulbrich Stainless Steels
U8 U. S. Steel Supply Div., U. S. Steel Corp.
U11 Union Carbide Metals Co.
U13 Union Steel Corp.

V2 Vanadium-Alloys Steel
V3 Vulcan-Kidd Steel Div., H. K. Porter Co.

W1 Wallace Barnes Steel Div., Associated Spring Corp.
W2 Wallingford Steel Corp.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W8 Western Automatic Machine Screw Co.
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.

Y1 Youngstown Sheet&Tube

STRIP

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	5.10
Allenport,Pa. P7	5.10
Alton,Ill. L1	5.30
Ashland,Ky.(8) A10	5.10
Atlanta A11	5.10
Bessemer,Ala. T2	5.10
Birmingham C15	5.10
Buffalo(27) R2	5.10
Conshohocken,Pa. A3	5.15
Detroit M1	5.10
Ecorse,Mich. G5	5.10
Fairfield,Ala. T2	5.10
Farrell,Pa. S3	5.10
Fontana,Calif. K1	5.85
Gary,Ind. U5	5.10
Ind.Harbor,Ind. I-2, Y1	5.10
Johnstown,Pa.(25) B2	5.10
Lackaw'na,N.Y.(25) B2	5.10
LosAngeles(25) B3	5.85
LosAngeles C1	8.60
Minnequa,Colo. C10	6.20
Riverdale,Ill. A1	5.10
SanFrancisco S7	6.60
Seattle (25) B3	6.10
Seattle N14	6.60
Sharon,Pa. S3	5.10
S.Chicago W14	5.10
S.SanFrancisco(25) B3	5.85
SparrowsPoint,Md. B2	5.10
Torrance,Calif. C11	5.85
Warren,O. R2	5.10
Weirton,W.Va. W6	5.10
Youngstown U5	5.10

STRIP, Hot-Rolled Alloy

Carnegie,Pa. S18	8.40
Farrell,Pa. S3	8.40
Gary,Ind. U5	8.40
Houston S5	8.65
Ind.Harbor,Ind. Y1	8.40
KansasCity,Mo. S5	8.65
LosAngeles B3	9.60
Lowellville,O. S3	8.40
Newport,Ky. A2	8.40
Sharon,Pa. A2, S3	8.40
S.Chicago,Ill. W14	8.40
Youngstown U5, Y1	8.40

STRIP, Hot-Rolled High-Strength, Low-Alloy

Ashland,Ky. A10	7.575
Bessemer,Ala. T2	7.575
Conshohocken,Pa. A3	7.575
Ecorse,Mich. G3	7.575
Fairfield,Ala. T2	7.575
Farrell,Pa. S3	7.575
Gary,Ind. U5	7.575
Ind.Harbor,Ind. I-2,Y1	7.575
Lackawanna,N.Y. B2	7.575
LosAngeles(25) B3	8.325
Seattle(25) B3	8.575
Sharon,Pa. S3	7.575
S.Chicago,Ill. W14	7.575
S.SanFrancisco(25) B3	8.325
SparrowsPoint,Md. B2	7.575
Warren,O. R2	7.575
Weirton,W.Va. W6	7.575
Youngstown U5, Y1	7.575

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	5.35
Warren,O. R2	5.875

STRIP, Cold-Rolled Carbon

Anderson,Ind. G6	7.425
Baltimore T6	7.425
Boston T6	7.975
Buffalo S40	7.425
Cleveland A7, J5	7.425
Dearborn,Mich. S3	7.425
Detroit D2, M1, P20	7.425
Dover,O. G6	7.425
Evanston,Ill. M22	7.525
Farrell,Pa. S3	7.425
Follansbee,W.Va. F4	7.425
Fontana,Calif. K1	9.20
FranklinPark,Ill. T6	7.525
Ind.Harbor,Ind. Y1	7.425
Indianapolis S41	7.575
LosAngeles C1, S41	9.30
McKeesport,Pa. E10	7.525
NewBedford,Mass. R10	7.875
NewBritain,Conn. S15	7.875
NewCastle,Pa. B4, E5	7.425
NewHaven,Conn. D2	7.875
NewKensington,Pa. A6	7.425
Pawtucket,R.I. R3	7.975
Pawtucket,R.I. N8	7.975
Philadelphia P24	7.875
Pittsburgh J5	7.425
Riverdale,Ill. A1	7.525
Rome,N.Y.(32) R6	7.425
Sharon,Pa. S3	7.425
Trenton,N.J.(31) R5	8.875
Wallingford,Conn. W2	7.875
Warren,O. R2, T5	7.425
Worcester,Mass. A7	7.975
Youngstown S41, Y1	7.425

STRIP, Cold-Rolled Alloy

Boston T6	15.90
Carnegie,Pa. S18	15.55
Cleveland A7	15.55
Dover,O. G6	15.55
Farrell,Pa. S3	15.55
FranklinPark,Ill. T6	15.55
Harrison,N.J. C18	15.55
Indianapolis S41	15.70
LosAngeles S41	17.75
Lowellville,O. S3	15.55
Pawtucket,R.I. N8	15.90
Riverdale,Ill. A1	15.55
Sharon,Pa. S3	15.55
Worcester,Mass. A7	15.85
Youngstown S41	15.55

STRIP, Cold-Rolled High-Strength, Low-Alloy

Cleveland A7	10.80
Dearborn,Mich. S3	10.80
Dover,O. G6	10.80
Farrell,Pa. S3	10.80
Ind.Harbor,Ind. Y1	10.80
Sharon,Pa. S3	10.80
Warren,O. R2	10.80
Weirton,W.Va. W6	10.80
Youngstown Y1	10.80

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2	8.175

STRIP, C.R. Electrogalvanized

Cleveland A7	7.425*
Dover,O. G6	7.425*
Evanston,Ill. M22	7.525*
McKeesport,Pa. E10	7.50*
Riverdale,Ill. A1	7.525*
Warren,O. B9, S3, T5	7.425*
Worcester,Mass. A7	7.975
Youngstown S41	7.425*

*Plus galvanizing extras.

STRIP, Galvanized (Continuous)

Farrell,Pa. S3	7.50
Sharon,Pa. S3	7.50

TIGHT COOPERAGE HOOP

Atlanta A11	5.65
Farrell,Pa. S3	5.525
Riverdale,Ill. A1	5.675
Sharon,Pa. S3	5.525
Youngstown U5	5.525

STRIP, Cold-Finished Spring Steel (Annealed)

	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Baltimore T6	9.50	10.70	12.90	15.90	18.85
Boston T6	9.50	10.70	12.90	15.90	18.85
Briston,Conn. W1	...	10.70	12.90	16.10	19.30
Carnegie,Pa. S18	8.95	10.40	12.60	15.60	....
Cleveland A7	8.95	10.40	12.60	15.60	18.55
Dearborn,Mich. S3	9.05	10.50	12.70	....	....
Detroit D2	9.05	10.50	12.70	15.70	....
Dover,O. G6	8.95	10.40	12.60	15.60	18.55
Evanston,Ill. M22	8.95	10.40	12.60	15.60	....
Farrell,Pa. S3	8.95	10.40	12.60	15.60	18.55
Fostoria,O. S1	10.05	10.40	12.60	15.60	....
FranklinPark,Ill. T6	9.05	10.40	12.60	15.60	18.55
Harrison,N.J. C18	...	....	12.90	16.10	19.30
Indianapolis S41	9.10	10.55	12.60	15.60	18.55
LosAngeles C1	11.15	12.60	14.80	17.80	....
LosAngeles S41	11.15	12.60	14.80	....	....
NewBritain,Conn. S15	9.40	10.70	12.90	15.90	18.85
NewCastle,Pa. B4, E5	8.95	10.40	12.60	15.60	....
NewHaven,Conn. D2	9.40	10.70	12.90	15.90	....
NewKensington,Pa. A6	8.95	10.40	12.60	15.60	....
New York W3	...	10.70	12.90	16.10	19.30
Pawtucket,R.I. N8	9.50	10.70	12.90	15.90	18.85
Riverdale,Ill. A1	9.05	10.40	12.60	15.60	18.55
Rome,N.Y.(32) R6	8.95	10.40	12.60	15.60	18.55
Sharon,Pa. S3	8.95	10.40	12.60	15.60	18.55
Trenton,N.J. R5	...	10.70	12.90	15.90	18.85
Wallingford,Conn. W2	9.40	10.70	12.90	15.90	18.75
Warren,O. T5	8.95	10.40	12.60	15.60	18.55
Worcester,Mass. A7, T6	9.50	10.70	12.90	15.90	18.85
Youngstown S41	8.95	10.40	12.60	15.60	18.55

Spring Steel (Tempered)

	Up to 0.80C	0.81-1.05C	1.06-1.35C
Bristol,Conn. W1	18.85	22.95	27.80
Buffalo W12	18.85	....	....
Fostoria,O. S1	19.05	22.15	....
FranklinPark,Ill. T6	19.20	23.30	28.15
Harrison,N.J. C18	18.85	22.95	27.80
New York W3	18.85	22.95	27.80
Palmer,Mass. W12	18.85	....	....
Trenton,N.J. R5	18.85	22.95	27.80
Worcester,Mass. A7, T6	18.85	22.95	27.80
Youngstown S41	19.20	23.30	28.15

TIN MILL PRODUCTS

TIN PLATE, Electrolytic (Base Box)

	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$9.10	$9.35	$9.75
Fairfield,Ala. T2	9.20	9.45	9.85
Fairless,Pa. U5	9.20	9.45	9.85
Fontana,Calif. K1	9.75	10.00	10.40
Gary,Ind. U5	9.10	9.35	9.75
GraniteCity,Ill. G4	9.20	9.45	9.60
IndianaHarbor,Ind. I-2, Y1	9.10	9.35	9.75
Irvin,Pa. U5	9.10	9.35	9.75
Niles,O. R2	9.10	9.35	9.75
Pittsburg,Calif. C11	9.75	10.00	10.40
SparrowsPoint,Md. B2	9.10	9.35	9.75
Yorkville,O. W10	9.10	9.35	9.75

ELECTROLYTIC TIN-COATED SHEET (20-27 Ga.; Dollars per 100 lb)

Aliquippa,Pa. J5	7.90	8.10
Niles,O. R2	7.90	8.10

TIN PLATE, American

	1.25 lb	1.50 lb
Aliquippa,Pa. J5	$10.40	$10.65
Fairfield,Ala. T2	10.50	10.75
Fairless,Pa. U5	10.50	10.75
Fontana,Calif. K1	11.05	11.30
Gary,Ind. U5	10.40	10.65
Ind.Harb. Y1	10.40	10.65
Pitts.,Calif. C11	11.05	11.30
Sp.Pt.,Md. B2	10.40	10.65
Weirton,W.Va. W6	10.40	10.65
Yorkville,O. W10	10.40	10.65

BLACK PLATE (Base Box)

Aliquippa,Pa. J5	$8.20
Fairfield,Ala. T2	8.30
Fairless,Pa. U5	8.30
Fontana,Calif. K1	8.85
Gary,Ind. U5	8.20
GraniteCity,Ill. G4	8.30
Ind.Harbor,Ind. I-2, Y1	8.20
Irvin,Pa. U5	8.20
Niles,O. R2	8.20
Pittsburg,Calif. C11	8.85
SparrowsPoint,Md. B2	8.25
Weirton,W.Va. W6	8.20
Yorkville,O. W10	8.20

HOLLOWARE ENAMELING Black Plate (29 Gage)

Aliquippa,Pa. J5	7.85
Gary,Ind. U5	7.85
GraniteCity,Ill. G4	7.95
Ind.Harbor,Ind. Y1	7.85
Irvin,Pa. U5	7.85
Yorkville,O. W10	7.85

MANUFACTURING TERNES (Special Coated, Base Box)

Gary,Ind. U5	$10.05
Irvin,Pa. U5	10.05

SILICON STEEL

C.R. COILS & CUT LENGTHS (22 Ga.)

Fully Processed (Semiprocessed ½c lower)	Field	Armature	Electric	Motor	Dynamo
Beech Bottom,W.Va. W10	....	11.70	12.40	13.55	14.65
Brackenridge,Pa. A4	....	....	12.40	13.55	14.65
GranitCity,Ill. G4	9.975*	11.30*	12.00*	13.15*	....
IndianaHarbor,Ind. I-2	9.875*	11.20*	11.90*	13.05*	....
Mansfield,O. E6	9.875*	11.70	12.40	13.55	14.65
Newport,Ky. A2	9.875	11.70*	12.40*	13.55*	14.65*
Niles,O. M21	9.875*	11.70	12.40	13.55	....
Vandergrift,Pa. U5	9.875*	11.70	12.40	13.55	14.65
Warren,O. R2	9.875*	11.70	12.40	13.55	14.65
Zanesville,O. A10	....	11.70†	12.40	13.55	14.65
					Stator
Vandergrift,Pa. U5	....	....	....	....	8.10
Mansfield,O. E6	....	....	....	....	8.10

SHEETS (22 Ga., coils & cut lengths) Fully Processed (Semiprocessed ½c lower)	T-72	T-65	T-58	T-52
Beech Bottom,W.Va. W10	15.70	16.30	16.80	17.85
Vandergrift,Pa. U5	15.70	16.30	16.80	17.85
Zanesville,O. A10	15.70	16.30	16.80	17.85

C.R. COILS & CUT LENGTHS (22 Ga.)	Grain Oriented T-100	T-90	T-80	T-73	T-66	T-72
Brackenridge,Pa. A4	18.10	19.70	20.20	20.70	15.70††	
Butler,Pa. A10	....	....	19.70	20.20	20.70	....
Vandergrift,Pa. U5	17.10	18.10	19.70	20.20	20.70	15.70
Warren,O. R2	....	....	....	....	....	15.70‡

*Semiprocessed. †Fully processed only. ‡Coils, annealed, semiprocessed ½c lower. ††Coils only.

WIRE

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2	8.00
Aliquippa,Pa. J5	8.00
Alton,Ill. L1	8.20
Atlanta A1	8.00
Bartonville,Ill. K4	8.10
Buffalo W12	8.00
Chicago W13	8.00
Cleveland A7, C20	8.00
Crawfordsville,Ind. M8	8.10
Donora,Pa. A7	8.00
Duluth A7	8.00
Fairfield,Ala. T2	8.00
Fostoria,O.(24) S1	8.10
Houston S5	8.25
Jacksonville,Fla. M8	8.35
Johnstown,Pa. B2	8.00
Joliet,Ill. A7	8.00
KansasCity,Mo. S5	8.25
Kokomo,Ind. C16	8.10
LosAngeles B3	8.95
Minnequa,Colo. C10	8.25
Monessen,Pa. P7, P16	8.00
N.Tonawanda,N.Y. B11	8.00
Palmer,Mass. W12	8.30
Pittsburg,Calif. C11	8.95
Portsmouth,O. P12	8.00
Rankin,Pa. A7	8.00
S.Chicago,Ill. R2	8.00
S.SanFrancisco C10	8.95
SparrowsPoint,Md. B2	8.10
Sterling,Ill.(1) N15	8.00
Sterling,Ill. N15	8.10
Struthers,O. Y1	8.00
Waukegan,Ill. A7	8.00
Worcester,Mass. A7	8.30

WIRE, Cold Heading Carbon

Elyria,O. W8	8.00

WIRE, Gal'd., for ACSR

Bartonville,Ill. K4	12.65
Buffalo W12	13.40
Cleveland A7	12.65
Donora,Pa. A7	12.65
Duluth A7	12.65
Johnstown,Pa. B2	13.40
Minnequa,Colo. C10	12.775
Monessen,Pa. P7, P16	12.65
Muncie,Ind. I-7	13.60
NewHaven,Conn. A7	12.95
Palmer,Mass. W12	13.70
Pittsburg,Calif. C11	13.45
Portsmouth,O. P12	12.65
Roebling,N.J. R5	12.95
SparrowsPt.,Md. B2	13.50
Struthers,O. Y1	13.40
Trenton,N.J. A7	12.95
Waukegan,Ill. A7	12.65
Worcester,Mass. A7	12.95

WIRE, Upholstery Spring

Aliquippa,Pa. J5	9.75
Alton,Ill. L1	9.95
Buffalo W12	9.75
Cleveland A7	9.75
Donora,Pa. A7	9.75
Duluth A7	9.75
Johnstown,Pa. B2	9.75
KansasCity,Mo. S5	10.00
LosAngeles B3	10.70
Minnequa,Colo. C10	9.95
Monessen,Pa. P7, P16	9.75
NewHaven,Conn. A7	10.05
Palmer,Mass. W2	10.05
Pittsburg,Calif. C11	10.70
Portsmouth,O. P12	9.75
Roebling,N.J. R5	10.05
S.Chicago,Ill. R2	9.75
S.SanFrancisco C10	10.70
SparrowsPt.,Md. B2	9.85
Struthers,O. Y1	9.75
Trenton,N.J. A7	10.05
Waukegan,Ill. A7	9.75
Worcester,Mass. A7	10.05

WIRE, MB Spring, High-Carbon

Aliquippa,Pa. J5	9.75
Alton,Ill. L1	9.95
Bartonville,Ill. K4	9.85
Buffalo W12	9.75
Cleveland A7	9.75
Donora,Pa. A7	9.75
Duluth A7	9.75
Fostoria,O. S1	9.80
Johnstown,Pa. B2	9.75
KansasCity,Mo. S5	10.00
LosAngeles B3	10.70
Milbury,Mass.(12) N6	10.05
Minnequa,Colo. C10	9.95
Monessen,Pa. P7, P16	9.75
Muncie,Ind. I-7	9.95
Palmer,Mass. W12	10.05
Pittsburg,Calif. C11	10.70
Portsmouth,O. P12	9.75
Roebling,N.J. R5	10.05
S.Chicago,Ill. R2	9.75
S.SanFrancisco C10	10.70
SparrowsPt.,Md. B2	9.85
Struthers,O. Y1	9.75
Trenton,N.J. A7	10.05
Waukegan,Ill. A7	9.75
Worcester,Mass. A7,J4,T6	10.05

WIRE, Fine & Weaving(8" Coils)

Alton,Ill. L1	16.50
Bartonville,Ill. K4	16.40
Chicago W13	16.30
Cleveland A7	16.30
Crawfordsville,Ind. M8	16.40
Fostoria,O. S1	16.30
Houston S5	16.55
Jacksonville,Fla. M8	16.65
Johnstown,Pa. B2	16.30
KansasCity,Mo. S5	16.55
Kokomo,Ind. C16	16.30
Minnequa,Colo. C10	16.55
Monessen,Pa. P16	16.30
Muncie,Ind. I-7	16.50
Palmer,Mass. W12	16.60
S.SanFrancisco C10	17.15
Waukegan,Ill. A7	16.30
Worcester,Mass. A7, J6	16.60

WIRE, Tire Bead

Bartonville,Ill. K4	17.15
Monessen,Pa. P16	17.15
Roebling,N.J. R5	17.65

ROPE WIRE (A)

Bartonville,Ill. K4	13.45
Buffalo W12	13.45
Fostoria,O. S1	13.45
Johnstown,Pa. B2	13.45
Monessen,Pa. P7	13.45
Muncie,Ind. I-7	13.65
Palmer,Mass. W12	13.75
Portsmouth,O. P12	13.45
Roebling,N.J. R5	13.75
St.Louis L8	13.45
SparrowsPt.,Md. B2	13.55
Struthers,O. Y1	13.45
Worcester,Mass. J4	13.75

(A) Plow and Mild Plow; add 0.25c for Improved Plow.

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	12.35
Baltimore T6	12.65
Boston T6	12.65
Buffalo W12	12.35
Chicago W13	12.45
Cleveland A7	12.35
Crawfordsville,Ind. M8	12.35
Dover,O. G6	12.35
Farrell,Pa. S3	11.65
Fostoria,O. S1	12.35
FranklinPark,Ill. T6	12.45
Kokomo,Ind. C16	12.35
Massillon,O. R8	12.35
Milwaukee C23	12.55
Monessen,Pa. P7, P16	12.35
Palmer,Mass. W12	12.65
Pawtucket,R.I. N8	11.95
Philadelphia P24	12.65
Riverdale,Ill. A1	12.45
Rome,N.Y. R6	12.35
Sharon,Pa. S3	12.35
Trenton,N.J. R5	12.65
Warren,O. B9	12.35
Worcester,Mass. A7,T6	12.65

NAILS, Stock

	Col.
AlabamaCity,Ala. R2	173
Aliquippa,Pa. J5	173
Atlanta A11	175
Bartonville,Ill. K4	175
Chicago W13	173
Cleveland A9	173
Crawfordsville,Ind. M8	175
Donora,Pa. A7	173
Duluth A7	173
Fairfield,Ala. T2	173
Houston S5	178
Jacksonville,Fla. M8	175
Johnstown,Pa. B2	173
Joliet,Ill. A7	173
KansasCity,Mo. S5	178
Kokomo,Ind. C16	175
Minnequa,Colo. C10	178
Monessen,Pa. P7	173
Pittsburg,Calif. C11	192
Rankin,Pa. A7	173
S.Chicago,Ill. R2	173
SparrowsPt.,Md. B2	175
Sterling,Ill. (7) N15	175
Worcester,Mass. A7	179

(To Wholesalers: per cwt)

Galveston,Tex. D7	$10.30

NAILS, Cut (100 lb keg)
To Dealers (33)

Wheeling,W.Va. W10	$9.80

POLISHED STAPLES

	Col.
AlabamaCity,Ala. R2	175
Aliquippa,Pa. J5	173
Atlanta A11	177
Bartonville,Ill. K4	177
Crawfordsville,Ind. M8	177
Donora,Pa. A7	173
Duluth A7	173
Fairfield,Ala. T2	173
Houston S5	180
Jacksonville,Fla. M8	177
Johnstown,Pa. B2	175
Joliet,Ill. A7	173
KansasCity,Mo. S5	180
Kokomo,Ind. C16	177
Minnequa,Colo. C10	180
Pittsburg,Calif. C11	194
Rankin,Pa. A7	173
S.Chicago,Ill. R2	175
SparrowsPt.,Md. B2	177
Sterling,Ill. (7) N15	175
Worcester,Mass. A7	181

TIE WIRE, Automatic Baler (14½ Ga.) (per 97 lb Net Box)
Coil No. 3150

AlabamaCity,Ala. R2	$10.26
Atlanta A11	10.36
Bartonville,Ill. K4	10.36
Buffalo W12	10.26
Chicago W13	10.26
Crawfordsville,Ind. M8	10.36
Donora,Pa. A7	10.26
Duluth A7	10.26
Fairfield,Ala. T2	10.26
Houston S5	10.51
Jacksonville,Fla. M8	10.36
Johnstown,Pa. B2	10.26
Joliet,Ill. A7	10.26
KansasCity,Mo. S5	10.51
Kokomo,Ind. C16	10.36
LosAngeles B3	11.05
Minnequa,Colo. C10	10.51
Pittsburg,Calif. C11	11.04
S.Chicago,Ill. R2	10.26
S.SanFrancisco C10	11.04
SparrowsPt.,Md. B2	10.36
Sterling,Ill. (37) N15	10.36

Coil No. 6500 Stand.

AlabamaCity,Ala. R2	$10.60
Atlanta A11	10.70
Bartonville,Ill. K4	10.70
Buffalo W12	10.60
Chicago W13	10.60
Crawfordsville,Ind. M8	10.70
Donora,Pa. A7	10.60
Duluth A7	10.60
Fairfield,Ala. T2	10.60
Houston S5	10.85
Jacksonville,Fla. M8	10.70
Johnstown,Pa. B2	10.60
Joliet,Ill. A7	10.60
KansasCity,Mo. S5	10.85
Kokomo,Ind. C16	10.70
LosAngeles B3	11.40
Minnequa,Colo. C10	10.85
Pittsburg,Calif. C11	11.40
S.Chicago,Ill. R2	10.60
S.SanFrancisco C10	11.40
SparrowsPt.,Md. B2	10.70
Sterling,Ill. (37) N15	10.70

Coil No. 6500 Interim

AlabamaCity,Ala. R2	$10.65
Atlanta A11	10.75
Bartonville,Ill. K4	10.75
Buffalo W12	10.65
Chicago W13	10.65
Crawfordsville,Ind. M8	10.75
Donora,Pa. A7	10.65
Duluth A7	10.65
Fairfield,Ala. T2	10.65
Houston S5	10.90
Jacksonville,Fla. M8	10.75
Johnstown,Pa. B2	10.65
Joliet,Ill. A7	10.65
KansasCity,Mo. S5	10.90
Kokomo,Ind. C16	10.75
LosAngeles B3	11.45
Minnequa,Colo. C10	10.90
Pittsburg,Calif. C11	11.45
S.Chicago,Ill. R2	10.65
S.SanFrancisco C10	11.45
SparrowsPt.,Md. B2	10.75
Sterling,Ill. (37) N15	10.75

BALE TIES, Single Loop

	Col.
AlabamaCity,Ala. R2	212
Atlanta A11	214
Bartonville,Ill. K4	214
Crawfordsville,Ind. M8	214
Donora,Pa. A7	212
Duluth A7	212
Fairfield,Ala. T2	212
Houston S5	217
Jacksonville,Fla. M8	214
Joliet,Ill. A7	212
KansasCity,Mo. S5	217
Kokomo,Ind. C16	214
Minnequa,Colo. C10	217
Pittsburg,Calif. C11	236
S.SanFrancisco C10	236
SparrowsPt.,Md. B2	214
Sterling,Ill. (7) N15	214

FENCE POSTS

Birmingham C15	177
ChicagoHts.,Ill. C2, I-2	177
Duluth A7	177
Franklin,Pa. F5	177
Johnstown,Pa. B2	177
Marion,O. P11	177
Minnequa,Colo. C10	182
Sterling,Ill. (1) N15	177
Tonawanda,N.Y. B12	177

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	193**
Aliquippa,Pa. J5	190§
Atlanta A11	198§
Bartonville,Ill. K4	198
Crawfordsville,Ind. M8	198
Donora,Pa. A7	193†
Duluth A7	193†
Fairfield,Ala. T2	193†
Houston S5	198**
Jacksonville,Fla. M8	198
Johnstown,Pa. B2	196§
Joliet,Ill. A7	193†
KansasCity,Mo. S5	198**
Kokomo,Ind. C16	195†
Minnequa,Colo. C10	198**
Monessen,Pa. P7	196§
Pittsburg,Calif. C11	213†
Rankin,Pa. A7	193†
S.Chicago,Ill. R2	193**
S.SanFrancisco C10	213*
SparrowsPoint,Md. B2	198§
Sterling,Ill. (7) N15	198††

WOVEN FENCE, 9-15 Ga.

	Col.
Ala.City,Ala. R2	187**
Aliq'ppa,Pa.9-11½ga.J5	190§
Atlanta A11	192§
Bartonville,Ill. K4	192
Crawfordsville,Ind. M8	192
Donora,Pa. A7	187†
Duluth A7	187†
Fairfield,Ala. T2	187†
Houston S5	192**
Jacksonville,Fla. M8	192
Johnstown,Pa.(43) B2	190§
Joliet,Ill. A7	187†
KansasCity,Mo. S5	192**
Kokomo,Ind. C16	189†
Minnequa,Colo. C10	192**
Pittsburg,Calif. C11	210†
Rankin,Pa. A7	187†
S.Chicago,Ill. R2	187**
Sterling,Ill.(7) N15	192††

WIRE (16 gage)

	An'ld Stone	Galv. Stone
Ala.City,Ala. R2	17.85	19.40**
Aliq'ppa,Pa. J5	17.85	19.65
Bartonville K4	17.95	19.75
Cleveland A7	17.85	....
Craw'dsville M8	17.95	19.80‡‡
Fostoria,O. S1	18.35	19.90†
Houston S5	18.10	19.65**
Jacksonville M8	17.95	19.80‡‡
Johnstown B2	17.85	19.65§
Kan.City,Mo. S5	18.10	....
Kokomo C16	17.25	18.80†
Minnequa C10	18.10	19.65**
P'lm'r,Mass. W12	18.15	19.70†
Pitts.,Calif. C11	18.20	19.75†
S.SanFran. C10	18.20	19.75**
Sterling(37) N15	17.25	19.05††
SparrowsPt. B2	17.95	19.75§
Waukegan A7	17.85	19.40†
Worcester A7	18.15	....

WIRE, Merchant Quality

(6 to 8 gage)	An'ld	Galv.
Ala.City,Ala. R2	9.00	9.55**
Aliquippa J5	8.65	9.325§
Atlanta(48) A11	9.10	9.775§
Bartonville(48) K4	9.10	9.775
Buffalo W12	9.00	9.55†
Cleveland A7	9.00	....
Crawfordsville M8	9.10	9.80‡‡
Donora,Pa. A7	9.00	9.55†
Duluth A7	9.00	9.55†
Fairfield T2	9.00	9.55†
Houston(48) S5	9.25	9.80**
Jack'ville,Fla. M8	9.10	9.80‡‡
Johnstown B2(48)	9.00	9.675§
Joliet,Ill. A7	9.00	9.55†
Kans.City(48) S5	9.25	9.80**
Kokomo(48) S16	9.10	9.65†
LosAngeles B3	9.95	10.625§
Monessen(48) P7	8.65	9.35§
Palmer,Mass. W12	9.30	9.85†
Pitts.,Calif. C11	9.95	10.50†
Rankin,Pa. A7	9.00	9.55†
S.Chicago R2	9.00	9.55**
S.SanFran. C10	9.95	10.50**
Spar'wsPt.(48)B2	9.10	9.775§
Sterling(48) N15	9.25	9.925††
St'ling(1)(48)N15	9.15	9.825††
Struthers,O. Y1	9.00	9.65‡
Worcester,Mass.A7	9.30	9.85†

Based on zinc price of: *13.50. †5c. §10c. ‡Less than 10c. ††10.50c. ‡‡11.00c. **Subject to zinc equalization extras.

FASTENERS

(Base discounts, shipments of one to four containers, per cent off list, f.o.b. mill)

BOLTS

Machine Bolts
Full Size Body (cut thread)
½ in. and smaller

3 in. and shorter	55.0
3¼ in. thru 6 in.	50.0
Longer than 6 in.	37.0
⅝ in., 3 in. & shorter.	47.0
3¼ in. thru 6 in.	40.0
Longer than 6 in.	31.0

⅝ in. thru 1 in.:

6 in. and shorter	37.0
Longer than 6 in.	31.0
1⅛ in. and larger:	
All lengths	31.0

Undersize Body (rolled thread)
½ in. and smaller:

3 in. and shorter	55.0
3¼ in. thru 6 in.	50.0

Carriage Bolts
Full Size Body (cut thread) & Undersize Body (rolled thread)
½ in. and smaller:

6 in. and shorter	48.0
Larger diameters and longer lengths	35.0

Lag, Plow, Tap, Blank, Step, Elevator, Tire, and Fitting Up Bolts
½ in. and smaller:

6 in. and shorter	48.0
Larger diameters and longer lengths	35.0

High Tensile Structural Bolts (Reg. semifinished hex head bolts, heavy semifinished hex nuts. Bolts — High-carbon steel, heat treated. Spec. ASTM, A-325, in bulk. Full keg quantity)

⅝ in. diam.	50.0
¾ in. diam.	47.0
⅞ and 1 in. diam.	43.0
1⅛ and 1¼ in. diam.	34.0

NUTS
(Keg or case quantity and over)

Square Nuts, Reg. & Heavy:

All sizes	56.0

(Full container)

Hex Nuts, Reg. & Heavy Hot Pressed & Cold Punched:

¾ in. and smaller..	62.0
⅞ in. to 1½ in., incl.	56.0
1⅝ in. and larger..	51.5

Hex Nuts, Semifinished, Heavy (Incl. Slotted):

¾ in. and smaller..	62.0
⅞ in. to 1½ in., incl.	56.0
1⅝ in. and larger...	51.5

Hex Nuts, Finished (Incl. Slotted and Castellated):

⅞ in. and smaller..	65.0
1 in. to 1½ in., incl.	57.0
1⅝ in. and larger..	51.5

Semifinished Hex Nuts, Reg. (Incl. Slotted):

⅝ in. and smaller..	62.0
¾ in. to ⅞ in., incl.	65.0
1 in. to 1½ in., incl.	57.0
1⅝ in. and larger..	51.5

CAP AND SETSCREWS
(Base discounts, packages, per cent off list, f.o.b. mill)

Hex Head Cap Screws, Coarse or Fine Thread, Bright:
6 in. and shorter:

¼ in. and smaller..	35.0
⅜, ⅞, and 1 in. ..	16.0

Longer than 6 in.:

⅝ in. and smaller..	3.0
¾, ⅞, and 1 in. ...	+11.0

High Carbon, Heat Treated:
6 in. and shorter:

⅝ in. and smaller..	20.0
¾, ⅞, and 1 in. ...	+ 5.0

Longer than 6 in.:

⅝ in. and smaller..	+19.0
¾, ⅞, and 1 in. ...	+39.0

Flat Head Cap Screws:

¾ in. and smaller, 6 in. and shorter ..	+85.0

Setscrews, Square Head, Cup Point, Coarse Thread:

Through 1 in. diam.: 6 in. and shorter...	+ 5.0
Longer than 6 in. ..	+29.0

RIVETS

F.o.b. Cleveland and/or freight equalized with Pittsburgh, f.o.b. Chicago and/or freight equalized with Birmingham except where equalization is too great.
Structural ½ in., larger 12.85
7/16 in. and smaller by 6 in. and shorter: 15.0%.

PRESTRESSED STRAND

(High strength, stress relieved; 7 wire uncoated. Net prices per 1000 ft, 40,000 lb and over)

	Standard Diameter, Inches 1/4	5/16	3/8	7/16	1/2
Alton,Ill. L1	$28.95	$43.40	$55.40	$73.00	$95.10
Buffalo W12	28.95	43.40	55.40	73.00	95.10
Cleveland A7	28.95	43.40	55.40	73.00	....
KansasCity,Mo. U3	32.15	48.20	61.55	81.10	105.65
Monessen,Pa. P16	32.15	48.20	61.55	81.10	105.65
NewHaven,Conn. A7	28.95	43.40	55.40	73.00	95.10
Pittsburg,Calif. C11	....	43.40	55.40	73.00	....
Pueblo,Colo. W12	28.95	43.40	55.40	73.00	95.10
Roebling,N.J. R5	28.95	43.40	55.40	73.00	95.10
St.Louis L8	28.95	43.40	55.40	73.00	95.10
Waukegan,Ill. A7	28.95	43.40	55.40	73.00	95.10

RAILWAY MATERIALS

Rails	Standard No. 1	Standard No. 2	All No. 2	Tee Rails 60 lb Under
Bessemer,Pa. U5	5.75	5.65	....	6.725
Ensley,Ala. T2	5.75	5.65	....	6.725
Fairfield,Ala. T2	....	....	....	6.725
Gary,Ind. U5	5.75	5.65	....	....
Huntington,W.Va. C15	....	....	....	6.50
Johnstown,Pa. B2	....	....	....(16)	6.725
Lackawanna,N.Y. B2	5.75	5.65	....	6.725
Minnequa,Colo. C10	5.75	5.65	....	7.225
Steelton,Pa. B2	5.75	5.65	....	....
Williamsport,Pa. S19	....	....	....	6.725

TIE PLATES

Fairfield,Ala. T2	6.875
Gary,Ind. U5	6.875
Lackawanna,N.Y. B2	6.875
Minnequa,Colo. C10	6.875
Seattle B3	7.025
Steelton,Pa. B2	6.875
Torrance,Calif. C11	6.875

JOINT BARS

Bessemer,Pa. U5	7.25
Fairfield,Ala. T2	7.25
Joliet,Ill. U5	7.25
Lackawanna,N.Y. B2	7.25
Minnequa,Colo. C10	7.25
Steelton,Pa. B2	7.25

AXLES

Ind.Harbor,Ind. S13	9.125
Johnstown,Pa. B2	9.125

TRACK BOLTS, Untreated

Cleveland R2	15.35
KansasCity,Mo. S5	15.35
Lebanon,Pa. B2	15.35
Minnequa,Colo. C10	15.35
Pittsburgh P14	14.75
Seattle B3	15.85

SCREW SPIKES

Lebanon,Pa. B2	15.10

STANDARD TRACK SPIKES

Fairfield,Ala. T2	9.75
Ind.Harbor,Ind. I-2,Y1	10.10
KansasCity,Mo. S5	10.10
Lebanon,Pa. B2	10.10
Minnequa,Colo. C10	10.10
Pittsburgh J5	10.10
Seattle B3	10.60
S.Chicago,Ill. R2	10.10
Struthers,O. Y1	10.10
Youngstown R2	10.10

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) 1⅛ to under 1 7/16 in.; 1 7/16 to under 1 15/16 in., 6.70c; 1 15/16 to 8 in., inclusive, 7.05c.
(6) Chicago or Birm. base.
(7) Chicago base 2 cols. lower.
(8) 16 Ga. and heavier.
(9) Merchant quality; add 0.35c for special quality.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass., base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) 3/8" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(21) New Haven, Conn., base.
(22) Deld. San Francisco Bay area.
(23) Special quality.
(24) Deduct 0.05c, finer than 15 Ga.
(25) Bar mill bands.
(26) Deld. in mill zone, 6.295c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c.
(31) Widths over ⅝ in.; 7.375c, for widths ⅝ in. and under by 0.125 in. and thinner.
(32) Buffalo base.
(33) To jobbers, deduct 20c.
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) Chicago base, 10 points lower.
(38) 14 Ga. & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Mill lengths, f.o.b. mill; deld. in mill zone or within switching limits, 5.635c.
(43) 9-14½ Ga.
(44) To fabricators.
(48) 6-7 Ga.
(49) 3½ in. and smaller rounds; 9.65c, over 3½ in. and other shapes.

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	+12.25	+28.75	+5.75	+23.5	+3.25	+21	+1.75	+19.5	+1.75	+19.5	+2	+19.75	0.5	+17.25
Ambridge, Pa. N2	+12.25	....	+5.75	....	+3.25	....	+1.75	....	+1.75	....	+2	....	0.5	....
Lorain, O. N3	+12.25	+28.75	+5.75	+23.5	+3.25	+21	+1.75	+19.5	+1.75	+19.5	+2	+19.75	0.5	+17.25
Youngstown Y1	+12.25	+28.75	+5.75	+23.5	+3.25	+21	+1.75	+19.5	+1.75	+19.5	+2	+19.75	0.5	+17.25

ELECTRICWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2	+12.25	+28.75	+5.75	+23.5	+3.25	+21	+1.75	+19.5	+1.75	+19.5	+2	+19.75	0.5	+17.25

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼	
List Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	....	....	....	....	....	....	2.25	+15	5.25	+11	8.75	+6.5	11.25	+5.25
Alton, Ill. L1	....	....	....	....	....	....	0.25	+17	3.25	+13	6.75	+8.5	9.25	+7.25
Benwood, W. Va. W10	1.5	+27	+10.5	+36	+21	+45.5	2.25	+15	5.25	+11	8.75	+6.5	11.25	+5.25
Butler, Pa. F6	4.5	+24	+8.5	+34	+19.5	+44	....	....	....	....	....	....	....	....
Etna, Pa. N2	....	....	....	....	....	....	2.25	+15	5.25	+11	8.75	+6.5	11.25	+5.25
Fairless, Pa. N3	....	....	....	....	....	....	0.25	+17	3.25	+13	6.75	+8.5	9.25	+7.25
Fontana, Calif. K1	....	....	....	....	....	....	+10.75	+28	+7.75	+24	+4.25	+19.5	+1.75	+18.25
Indiana Harbor, Ind. Y1	....	....	....	....	....	....	1.25	+16	4.25	+12	7.75	+7.5	10.25	+7.75
Lorain, O. N3	....	....	....	....	....	....	2.25	+15	5.25	+11	8.75	+6.5	11.25	+5.25
Sharon, Pa. S4	4.5	+24	+8.5	+34	+19.5	+44	....	....	....	....	....	....	....	....
Sharon, Pa. M6	....	....	....	....	....	....	2.25	+15	5.25	+11	8.75	+6.5	11.25	+5.25
Sparrows Pt., Md. B2	0.5	+28	+11.5	+37	+22	+45.5	0.25	+17	3.25	+13	6.75	+8.5	9.25	+7.25
Wheatland, Pa. W9	4.5	+24	+8.5	+34	+19.5	+44	2.25	+15	5.25	+11	8.75	+6.5	11.25	+5.25
Youngstown R2, Y1	....	....	....	....	....	....	2.25	+15	5.25	+11	8.75	+6.5	11.25	+5.25

Size—Inches	1½		2		2½		3		3½		4	
List Per Ft	27.5c		37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft	2.72		3.68		5.82		7.62		9.20		10.89	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	11.75	+4.25	12.25	+3.75	13.75	+3.5	13.75	+3.5	....	....	....	....
Alton, Ill. L1	9.75	+6.25	10.25	+5.75	11.75	+5.5	11.75	+5.5	1.25	+16.5	1.25	+16.5
Benwood, W. Va. W10	11.75	+4.25	12.25	+3.75	13.75	+3.5	13.75	+3.5	3.25	+14.5	3.25	+14.5
Etna, Pa. N2	11.75	+4.25	12.25	+3.75	13.75	+3.5	13.75	+3.5	3.25	+14.5	3.25	+14.5
Fairless, Pa. N3	9.75	+6.25	10.25	+5.75	11.75	+5.5	11.75	+5.5	1.25	+16.5	1.25	+16.5
Fontana, Calif. K1	+1.25	+17.25	+0.75	+16.75	0.75	+16.5	0.75	+16.5	+9.75	+27.5	+9.75	+27.5
Indiana Harbor, Ind. Y1	10.75	+5.25	11.25	+4.75	12.75	+4.5	12.25	+4.5	2.25	+15.5	2.25	+15.5
Lorain, O. N3	11.75	+4.25	12.25	+3.75	13.75	+3.5	13.75	+3.5	....	....	....	....
Sharon, Pa. M6	11.75	+4.25	12.25	+3.75	13.75	+3.5	13.75	+3.5	....	....	....	....
Sparrows Pt., Md. B2	9.75	+6.25	10.25	+5.75	11.75	+5.5	11.75	+5.5	1.25	+16.5	1.25	+16.5
Wheatland, Pa. W9	11.75	+4.25	12.25	+3.75	13.75	+3.5	13.75	+3.5	3.25	+14.5	3.25	+14.5
Youngstown R2, Y1	11.75	+4.25	12.25	+3.75	13.75	+3.5	13.75	+3.5	3.25	+14.5	3.25	+14.5

*Galvanized pipe discounts based on current price of zinc (11.50c, East St. Louis).

Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

AISI Type	—Rerolling— Ingot	Slabs	Forging Billets	H.R. Strip	H.R. Rods; C.F. Wire	Bars; Structural Shapes	Plates	Sheets	C.R. Strip; Flat Wire
201	22.75	28.00	....	36.00	....	43.50	39.25	48.50	45.00
202	24.75	31.50	37.75	39.00	42.25	44.50	40.00	49.25	49.25
301	24.00	29.00	38.75	37.25	43.50	46.00	41.25	51.25	47.50
302	26.25	32.75	39.50	40.50	44.25	46.75	42.25	52.00	52.00
302B	26.50	34.00	42.25	45.75	46.75	49.00	44.50	57.00	57.00
303	....	33.25	42.50	....	47.25	49.75	45.00	56.75	56.75
304	28.00	34.50	42.00	43.75	47.00	49.50	45.75	55.00	55.00
304L	....	....	49.75	51.50	54.75	57.25	53.50	62.75	62.75
305	29.50	38.25	44.00	47.50	47.00	49.50	46.25	56.75	56.75
308	32.00	39.75	49.00	50.25	54.75	57.75	55.25	63.00	63.00
309	41.25	51.25	60.00	64.50	66.25	69.50	66.00	80.50	80.50
310	51.50	63.75	81.00	84.25	89.75	94.50	87.75	96.75	96.75
314	....	....	80.50	....	89.75	94.50	87.75	....	104.25
316	41.25	51.25	64.50	68.50	71.75	75.75	71.75	80.75	80.75
316L	....	....	72.25	76.25	79.50	83.50	79.50	88.50	88.50
317	49.75	62.25	79.75	88.25	89.50	94.25	88.50	101.00	101.00
321	33.50	41.50	48.75	53.50	54.50	57.50	54.75	65.50	65.50
330	....	....	123.25	....	113.00	143.75	135.00	149.25	149.25
18-8 CbTa	38.50	48.25	57.75	63.50	63.75	67.25	64.75	79.25	79.25
403	....	....	29.25	....	33.25	35.00	30.00	40.25	40.25
405	20.25	26.50	30.75	36.00	34.75	36.50	32.50	46.75	46.75
410	17.50	22.25	29.25	31.00	33.25	35.00	30.00	40.25	40.25
416	....	....	29.75	....	33.75	35.50	31.25	48.25	48.25
420	....	34.75	35.50	41.75	40.75	42.75	40.25	62.00	62.00
430	17.75	22.50	29.75	32.00	33.75	35.50	31.00	40.75	40.75
430F	....	....	30.50	....	34.25	36.00	31.75	51.75	51.75
431	....	29.75	39.25	....	43.50	46.00	41.00	56.00	56.00
446	....	....	40.75	59.00	46.00	48.25	42.75	70.00	70.00

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; American Steel & Wire Div., U. S. Steel Corp.; Anchor Drawn Steel Co., division of Vanadium-Alloys Steel Co.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; A. M. Byers Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Carpenter Steel Co. of New England; Charter Wire Products; Crucible Steel Co. of America; Damascus Tube Co.; Dearborn Div., Sharon Steel Corp.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Firth Sterling Inc.; Fort Wayne Metals Inc.; Green River Steel Corp., subsidiary of Jessop Steel Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg-Warner Corp.; Ellwood Ivins Steel Tube Works Inc.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Stainless & Strip Div., Jones & Laughlin Steel Corp.; Joslyn Stainless Steels, division of Joslyn Mfg. & Supply Co.; Latrobe Steel Co.; Lukens Steel Co.; Maryland Fine & Specialty Wire Co. Inc.; McLouth Steel Corp.; Metal Forming Corp.; Midvale-Heppenstall Co.; National Standard Co.; National Tube Div., U. S. Steel Corp.; Pacific Tube Co.; Page Steel & Wire Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Riverside-Alloy Metal Div., H. K. Porter Company Inc.; Rodney Metals Inc.; Sawhill Tubular Products Inc.; Sharon Steel Corp.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Standard Tube Co.; Superior Steel Div., Copperweld Steel Co.; Superior Tube Co.; Sweepco Tube Corp.; Techalloy Co. Inc.; Timken Roller Bearing Co.; Trent Tube Co., subsidiary of Crucible Steel Co. of America; Tube Methods Inc.; Ulbrich Stainless Steel Inc.; Union Steel Corp.; U. S. Steel Corp.; Universal Cyclops Steel Corp.; Vanadium-Alloys Steel Co.; Wall Tube & Metal Products Co.; Wallingford Steel, subsidiary, Allegheny Ludlum Steel Corp.; Washington Steel Corp.

Clad Steel

	Plates— Carbon Base 5%	10%	15%	20%	Sheets Carbon Base 20%
Stainless					
302	....	....	....	....	37.50
304	26.05	28.80	31.55	34.30	39.75
304L	30.50	33.75	36.95	40.15	....
316	38.20	42.20	46.25	50.25	58.25
316L	42.30	46.75	51.20	55.65	....
316 Cb	49.90	55.15	60.40	65.65	....
321	31.20	34.50	37.75	41.05	47.25
347	36.90	40.80	44.65	48.55	57.00
405	22.25	24.60	26.90	29.25	....
410	20.55	22.70	24.85	27.00	....
430	21.20	23.45	25.65	27.90	....
Inconel	48.90	59.85	70.15	80.85	....
Nickel	41.65	51.95	63.30	72.70	....
Nickel, Low Carbon	41.95	52.60	63.30	74.15	....
Monel	43.35	53.55	63.80	74.05	....

	Strip, Carbon Base —Cold Rolled— 10%	Both Sides
Copper*	35.55	42.05

*Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4, and Washington, Pa. J3, nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S18.

Tool Steel

Grade	$ per lb	Grade	$ per lb
Reg. Carbon (W-1)	0.330	W-Cr Hot Work (H-12)	0.530
Spec. Carbon (W-1)	0.385	V-Cr Hot Work (H-13)	0.550
Oil Hardening (O-1)	0.505	W Hot Wk. (H-21)	1.425-1.44
V-Cr Hot Work (H-11)	0.505	Hi-Carbon-Cr (D-11)	0.955

Grade by Analysis (%) W	Cr	V	Co	Mo	AISI Designation	$ per lb
18	4	1	....	....	T-1	1.840
18	4	2	....	....	T-2	2.005
13.5	4	3	....	....	T-3	2.105
18.25	4.25	1	4.75	....	T-4	2.545
18	4	2	9	....	T-5	2.915
20.25	4.25	1.6	12.95	....	T-6	4.330
13.75	3.75	2	5	....	T-8	2.485
1.5	4	1	....	8.5	M-1	1.200
6.4	4.5	1.9	....	5	M-2	1.345
6	4	3	....	6	M-3	1.590

Tool steel producers include: A4, A8, B2, B8, C4, C9, C12, C18, F2, J3, L3, M14, S8, U4, V2, and V3.

Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate.

	Basic	No. 2 Foundry	Malle-able	Besse-mer
Birmingham District				
Birmingham R2	62.00	62.50**	....	....
Birmingham U6	....	62.50**	66.50	....
Woodward,Ala. W15	62.50*	62.50**	66.50	....
Cincinnati, deld.	....	70.20	....	....
Buffalo District				
Buffalo H1, R2	66.00	66.50	67.00	67.50
N.Tonawanda,N.Y. T9	....	66.50	67.00	67.50
Tonawanda,N.Y. W12	66.00	66.50	67.00	67.50
Boston, deld.	77.29	77.79	78.29	....
Rochester,N.Y., deld.	69.02	69.52	70.02	....
Syracuse,N.Y., deld.	70.12	70.62	71.12	....
Chicago District				
Chicago I-3	66.00	66.50	66.50	67.00
S.Chicago,Ill. R2	66.00	66.50	66.50	67.00
S.Chicago,Ill. W14	66.00	....	66.50	67.00
Milwaukee, deld.	69.02	69.52	69.52	70.02
Muskegon,Mich., deld.	....	74.52	74.52	....
Cleveland District				
Cleveland R2, A7	66.00	66.50	66.50	67.00
Akron,Ohio, deld.	69.52	70.02	70.02	70.52
Mid-Atlantic District				
Birdsboro,Pa. B10	68.00	68.50	69.00	69.50
Chester,Pa. P4	68.00	68.50	69.00	....
Swedeland,Pa. A3	68.00	68.50	69.00	69.50
NewYork, deld.	....	75.50	76.00	....
Newark,N.J., deld.	72.69	73.19	73.69	74.19
Philadelphia, deld.	70.41	70.91	71.41	71.99
Troy,N.Y. R2	68.00	68.50	69.00	69.50
Pittsburgh District				
NevilleIsland,Pa. P6	66.00	66.50	66.50	67.00
Pittsburgh (N&S sides), Aliquippa, deld.	....	67.95	67.95	68.48
McKeesRocks,Pa., deld.	....	67.60	67.60	68.13
Lawrenceville,Homestead, Wilmerding,Monaca,Pa., deld.	....	68.26	68.26	68.79
Verona,Trafford,Pa., deld.	68.29	68.82	68.82	69.35
Brackenridge,Pa., deld.	68.60	69.10	69.10	69.63
Midland,Pa. C18	66.00	....	....	....
Youngstown District				
Hubbard,Ohio Y1	....	....	66.50	....
Sharpsville,Pa. S6	66.00	....	66.50	67.00
Youngstown Y1	....	....	66.50	....
Mansfield,Ohio, deld.	71.30	....	71.80	72.30
Duluth I-3	66.00	66.50	66.50	67.00
Erie,Pa. I-3	66.00	66.50	66.50	67.00
Everett,Mass. E1	67.50	68.00	68.50	....
Fontana,Calif. K1	75.00	75.50	....	....
Geneva,Utah C11	66.00	66.50	....	....
GraniteCity,Ill. G4	67.90	68.40	68.90	....
Ironton,Utah C11	66.00	66.50	....	....
Minnequa,Colo. C10	68.00	68.50	69.00	....
Rockwood,Tenn. T3	....	62.50‡	66.50	....
Toledo,Ohio I-3	66.00	66.50	66.50	67.00
Cincinnati, deld.	72.94	73.44	....	....

*Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.
**Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.50.
‡Phos. 0.50% up; Phos. 0.30-0.49, $63.50.

PIG IRON DIFFERENTIALS

Silicon: Add 75 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos. iron on which base is 1.75-2.00%.

Manganese: Add 50 cents per ton for each 0.25% manganese over 1% or portion thereof.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.01-6.50% silicon; add 75c for each 0.50% silicon or portion thereof over the base grade within a range of 6.50 to 11.50%; starting with silicon over 11.50% add $1.50 per ton for each 0.50% silicon or portion thereof up to 14%; add $1 for each 0.50% Mn over 1%)

Jackson,Ohio I-3, J1	$78.00
Buffalo H1	79.25

ELECTRIC FURNACE SILVERY IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1.25 for each 0.50% Mn over 1%; $2 per gross ton premium for 0.045% max P)

CalvertCity,Ky. P15	$99.00
NiagaraFalls,N.Y. P15	99.00
Keokuk,Iowa Open-hearth & Fdry, $9 freight allowed K2	103.50
Keokuk,Iowa O.H. & Fdry, 12½ lb piglets, 16% Si, max fr'gt allowed up to $9, K2	106.50

LOW PHOSPHORUS PIG IRON, Gross Ton

Lyles,Tenn. T3 (Phos. 0.035% max)	$73.00
Rockwood,Tenn. T3 (Phos. 0.035% max)	73.00
Troy,N.Y. R2 (Phos. 0.035% max)	73.00
Philadelphia, deld.	81.67
Cleveland A7 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Duluth I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Erie,Pa. I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
NevilleIsland,Pa. P6 (Intermediate) (Phos. 0.036-0.075% max)	71.00

Steel Service Center Products

Representative prices, per pound, subject to extras, f.o.b. warehouse. City delivery charges are 15 cents per 100 lb except: Denver, Moline, Norfolk, Richmond, Washington, 20 cents; Baltimore, Boston, Los Angeles, New York, Philadelphia, Portland, Spokane, San Francisco, 10 cents; Atlanta, Birmingham, Chattanooga, Houston, Seattle, no charge.

	SHEETS				STRIP	BARS			Standard Structural Shapes	PLATES	
	Hot-Rolled	Cold-Rolled	Galv. 10 Ga.†	Stainless Type 302	Hot-Rolled*	H.R. Rounds	C.F. Rds.‡	H.R. Alloy 4140††[5]		Carbon	Floor
Atlanta	8.50§	9.86§	10.13	....	8.91	9.39	13.24 #	....	9.40	9.29	11.21
Baltimore	8.55	9.25	9.99	....	9.05	9.45	11.85 #	15.48	9.55	9.00	10.50
Birmingham	8.18	9.45	10.46	....	8.51	8.99	....	....	9.00	8.89	10.90
Boston	9.31	10.40	11.97	53.50	9.73	10.11	13.39 #	15.71	10.01	10.02	11.85
Buffalo	8.40	9.60	10.85	55.98	8.75	9.15	11.45 #	15.40	9.25	9.20	10.75
Chattanooga	8.35	9.69	9.65	....	8.40	8.77	10.46	....	8.88	8.80	10.66
Chicago	8.25	9.45	10.50	53.00	8.51	8.99	9.15	15.05	9.00	8.89	10.20
Cincinnati	8.43	9.51	10.95	53.43	8.83	9.31	11.53 #	15.37	9.56	9.27	10.53
Cleveland	8.36	9.54	10.65	52.33	8.63	9.10	11.25 #	15.16	9.39	9.13	10.44
Dallas	8.80	9.30	....	....	8.85	8.80	....	....	8.75	9.15	10.40
Denver	9.40	11.84	12.94	....	9.43	9.80	11.19	....	9.84	9.76	11.08
Detroit	8.51	9.71	11.25	56.50	8.88	9.30	9.51	15.33	9.56	9.26	10.46
Erie, Pa.	8.35	9.45	9.95[10]	....	8.60	9.10	11.25	....	9.35	9.10	10.60
Houston	8.40	8.90	10.29	52.00	8.45	8.40	11.60	15.75	8.35	8.75	10.10
Jackson, Miss.	8.52	9.79	....	....	8.84	9.82	10.68	....	9.33	9.22	11.08
Los Angeles	8.70[2]	10.80[2]	12.15[2]	57.60	9.15	9.10[2]	12.95[2]	16.35	9.00[2]	9.10[2]	11.30[2]
Memphis, Tenn.	8.59	9.80	....	....	8.84	9.32	11.25 #	....	9.33	9.22	10.86
Milwaukee	8.39	9.59	11.04	....	8.65	9.13	9.39	15.19	9.22	9.03	10.34
Moline, Ill.	8.55	9.80	....	....	8.84	8.95	9.15	....	8.99	8.91	....
New York	8.87	10.13	11.10	53.08	9.64	9.99	13.25 #	15.50	9.74	9.77	11.05
Norfolk, Va.	8.40	....	....	....	9.10	9.10	12.00	....	9.40	8.85	10.35
Philadelphia	8.20	9.25	10.61	52.71	9.25	9.40	11.95 #	15.48	9.10	9.15	10.40**
Pittsburgh	8.35	9.55	10.90	52.00	8.61	8.99	11.25 #	15.05	9.00	8.89	10.20
Richmond, Va.	8.40	....	10.40	....	9.10	9.00	....	....	9.40	8.85	10.35
St. Louis	8.63	9.83	11.28	....	8.89	9.37	9.78	15.43	9.48	9.27	10.58
St. Paul	8.79	10.04	11.49	....	8.84	9.21	9.86	....	9.38	9.30	10.49
San Francisco	9.65	11.10	11.40	55.10	9.75	10.15	13.00	16.00	9.85	10.00	12.35
Seattle	10.30	11.55	12.50	56.52	10.25	10.50	14.70	16.80[3]	10.20	10.10	12.50
South'ton, Conn.	9.07	10.33	10.71	....	9.48	9.74	....	....	9.57	9.57	10.91
Spokane	10.35	11.55	12.55	57.38	10.80	11.05	14.70	16.80	10.25	10.15	13.05
Washington	9.15	....	....	....	9.65	10.05	12.50	....	10.15	9.60	11.10

*Prices do not include gage extras; †prices include gage and coating extras; ‡includes 35-cent bar quality extras; §42 in. and under; **⅛ in. and heavier; ††as annealed; ‡‡¾ in. to 4 in. wide, inclusive; #net price, 1 in. round C-1018.

Base quantities, 2000 to 4999 lb except as noted; cold-finished bars, 2000 lb and over except in Seattle, 2000 to 3999 lb; stainless sheets, 8000 lb except in Chicago, New York, Boston, Seattle, 10,000 lb and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb, except in Seattle, 30,000 lb and over; [2]—30,000 lb; [3]—1000 to 4999 lb; [5]—1000 to 1999 lb; [10]—2000 lb and over.

Refractories

Fire Clay Brick (per 1000)

High-Heat Duty: Ashland, Grahn, Hayward, Hitchens, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Look Haven, Lumber, Orviston, West Decatur, Winburne, Snow Shoe, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parrall, Portmouth, Ohio, Ottawa, Ill., Stevens Pottery, Ga., $140; Salina, Pa., $145; Niles, Ohio, $138; Cutler, Utah, $165.

Super-Duty: Ironton, Ohio, Vandalia, Mo., Olive Hill, Ky., Clearfield, Salina, Winburne, Snow Shoe, Pa., New Savage, Md., St. Louis, $185; Stevens Pottery, Ga., $195; Cutler, Utah, $233.

Silica Brick (per 1000)

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Pt. Matilda, Pa., Portsmouth, Ohio, Hawstone, Pa., $158; Warren, Niles, Windham, Ohio, Hays, Latrobe, Morrisville, Pa., $163; E. Chicago, Ind., Joliet, Rockdale, Ill., $168; Lehigh, Utah, $175; Los Angeles, $180.

Super-Duty: Sproul, Hawstone, Pa., Niles, Warren, Windham, Ohio, Leslie, Md., Athens, Tex., $157; Morrisville, Hays, Latrobe, Pa., $168; E. Chicago, Ind., $167; Curtner, Calif., $182.

Semisilica Brick (per 1000)

Woodbridge, N. J., $140; Philadelphia, Clearfield, Pa., $145.

Ladle Brick (per 1000)

Dry Pressed: Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Vanport, Pa., Mexico, Vandalia, Mo., Wellsville, Irondale, New Salisbury, Ohio, $96.75; Clearfield, Pa., Portsmouth, Ohio, $102.

High-Alumina Brick (per 1000)

50 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $250; Danville, Ill., $253; Philadelphia, $265; Clearfield, Pa., $230; Orviston, Snow Shoe, Pa., $260.

60 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $310; Danville, Ill., $313; Clearfield, Orviston, Snow Shoe, Pa., $320; Philadelphia, $325.

70 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $350; Danville, Ill., $353; Clearfield, Orviston, Snow Shoe, Pa., $360; Philadelphia, $365.

Sleeves (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, $188.

Nozzles (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, $310.

Runners (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., $234.

Dolomite (per net ton)

Domestic, dead-burned, bulk, Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Woodville, Gibsonburg, Narlo, Ohio, $16.75; Thornton, McCook, Ill., $17; Dolly Siding, Bonne Terre, Mo., $15.60.

Magnesite (per net ton)

Domestic, dead-burned, ⅛ in. grains with fines: Chewelah, Wash., Luning, Nev., $46; ⅜ in. grains with fines: Baltimore, $73.

Fluorspar

Metallurgical grades, f.o.b. shipping point in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $37-$41; 70%, $36-$40; 60%, $33-$36.50. Imported, net ton, f.o.b. cars point of entry, duty paid, metallurgical grade; European, $30-$33, contract; Mexican, all rail, duty paid, $25; barge, Brownsville, Tex., $27.

Metal Powder

(Per pound f.o.b. shipping point in ton lots for minus 100 mesh, except as noted)

	Cents
Sponge Iron, Swedish: 98% Fe: F.o.b. Camden or Riverton, N. J., freight allowed east of Mississippi river, ocean bags, 23,000 lb and over	11.25
Sponge Iron, Domestic, 98% Fe: Deld. east of Mississippi River 23,000 lb and over	11.25
100 mesh	9.10
40 mesh	8.10
Electrolytic Iron, Melting stock, 99.87% Fe, irregular fragments of ⅛ in. x 1.3 in.	28.75
(In contract lots of 240 tons price is 22.75c)	
Annealed, 99.5% Fe	36.50
Unannealed (99 + % Fe)	36.00
Unannealed (99 + % Fe) (minus 325 mesh)	59.00
Powder Flakes (minus 16, plus 100 mesh)	29.00
Carbonyl Iron: 98.1-99.9%, 3 to 20 microne, depending on grade, 93.00-290.00 in standard 200-lb containers; all minus 200 mesh	
Aluminum: Atomized, 500-lb drum, freight allowed Carlots	38.50
Ton lots	40.50
Antimony, 500-lb lots	42.00*
Brass, 5000-lb lots	33.00-48.90†
Bronze, 5000-lb lots	49.60-53.70†
Copper: Electrolytic	14.25*
Reduced	14.25*
Lead	7.50*
Manganese: Minus 35 mesh	64.00
Minus 100 mesh	70.00
Minus 200 mesh	75.00
Nickel, unannealed	74.00
Nickel-Silver, 5000-lb lots	50.99-55.40†
Phosphor-Copper, 5000-lb lots	61.80
Copper (atomized) 5000-lb lots	42.30-50.80†
Silicon	47.50
Solder	7.00*
Stainless Steel, 304	$1.07
Stainless Steel, 316	$1.26
Tin	14.00*
Zinc, 5000-lb lots	19.00-32.20‡
Tungsten: Melting grade, 99% 60 to 200 mesh, nominal: 1000 lb and over	3.15
Less than 1000 lb	3.30
Chromium, electrolytic 99.8% Cr, min metallic basis	5.00

*Plus cost of metal. †Depending on composition. ‡Depending on mesh.

Electrodes

Threaded with nipple; unboxed, f.o.b. plant

GRAPHITE

Inches Diam	Inches Length	Per 100 lb
2	24	$64.00
2½	30	41.50
3	40	39.25
4	40	37.00
5⅛	40	36.50
6	60	33.25
7	60	29.75
8, 9, 10	60	29.50
12	72	28.25
14	60	28.25
16	72	27.25
17	60	27.25
18	72	27.00
20	72	26.50
24	84	27.25

CARBON

8	60	14.25
10	60	13.80
12	60	14.75
14	60	14.75
14	72	12.55
17	60	12.65
17	72	12.10
20	90	11.55
24	72, 84	11.95
24	96	12.10
30	84	12.00
35, 40	110	11.60
40	100	12.50

Imported Steel

(Base per 100 lb, landed, duty paid, based on current ocean rates. Any increase in these rates is for buyer's account. Source of shipment: Western continental European countries.)

	North Atlantic	South Atlantic	Gulf Coast	West Coast
Deformed Bars, Intermediate, ASTM-A 305	$5.10	$5.10	$5.00	$5.45
Bar Size Angles	5.00	5.00	4.90	5.33
Structural Angles	5.00	5.00	4.90	5.33
I-Beams	5.06	5.06	4.96	5.40
Channels	5.06	5.06	4.96	5.40
Plates (basic bessemer)	6.62	6.62	6.62	6.94
Sheets, H.R.	8.20	8.20	8.20	8.50
Sheets, C.R. (drawing quality)	8.75	8.75	8.75	9.12
Furring Channels, C.R., 1000 ft, ¾ x 0.30 lb per ft	25.71	25.59	25.59	28.46
Barbed Wire (†)	6.60	6.60	6.60	6.95
Merchant Bars	5.40	5.40	5.35	5.90
Hot-Rolled Bands	7.15	7.15	7.15	7.55
Wire Rods, Thomas Commercial No. 5	5.15	5.28	5.10	5.45
Wire Rods, O.H. Cold Heading Quality No. 5	6.05	6.18	6.00	6.30
Bright Common Wire Nails ($)	7.89	7.75	7.67	8.26

†Per 82 lb net reel. $Per 100-lb kegs, 20d nails and heavier.

Ores

Lake Superior Iron Ore

(Prices effective for the 1958 shipping season, gross ton, 51.50% iron natural rail of vessel, lower lake ports.)

Mesabi bessemer	$11.60
Mesabi nonbessemer	11.45
Old Range bessemer	11.85
Old Range nonbessemer	11.70
Open-hearth lump	12.70
High phos	11.45

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon, which were in effect Jan. 30, 1957, and increases or decreases after that date are absorbed by the seller.

Eastern Local Iron Ore

Cents per unit, deld. E. Pa.

New Jersey, foundry and basic 62-64% concentrates	18.00-19.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 65%	23.00
N. African hematite (apot)	nom
Brazilian iron ore, 68.5%	26.00

Tungsten Ore

Net ton, unit

Foreign wolframite, good commercial quality	$12.25-$12.50*
Domestic, concentrates f.o.b. milling points	16.00-17.00†

*Before duty. †Nominal.

Manganese Ore

Mn 46-48%, Indian (export tax included) $1.10 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; other than Indian, nominal; contracts by negotiation.

Chrome Ore

Gross ton, f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., Tacoma, Wash.

Indian and Rhodesian

48% 3:1	$42.00-44.00
48% 2.8:1	38.00-40.00
48% no ratio	29.00-31.00

South African Transvaal

44% no ratio	22.00-23.00
48% no ratio	29.00-31.00

Turkish

48% 3:1	51.00-55.00

Domestic

Rail nearest seller

18% 3:1	39.00

Molybdenum

Sulfide concentrate, per lb of Mo content, mines, unpacked	$1.23

Antimony Ore

Per short ton unit of Sb content, c.i.f. seaboard

50-55%	$2.25-2.40
60-65%	2.50-3.10

Vanadium Ore

Cents per lb V_2O_5

Domestic	31.00

Metallurgical Coke

Price per net ton

Beehive Ovens

Connellsville, Pa., furnace	$14.75-15.25
Connellsville, Pa., foundry	18.00-18.50

Oven Foundry Coke

Birmingham, ovens	$30.35
Cincinnati, deld.	33.34
Buffalo, ovens	32.00
Detroit, ovens	32.00
Pontiac, Mich., deld.	33.95
Saginaw, Mich., deld.	35.53
Erie, Pa., ovens	32.00
Everett, Mass., ovens: New England, deld.	33.55*
Indianapolis, ovens	31.25
Ironton, Ohio, ovens	30.70
Cincinnati, deld.	33.54
Kearny, N. J., ovens	31.25
Milwaukee, ovens	32.00
Neville Island (Pittsburgh), Pa., ovens	30.75
Painesville, Ohio, ovens	32.00
Cleveland, deld.	34.19
Philadelphia, ovens	31.00
St. Louis, ovens	33.00
St. Paul, ovens	31.25
Chicago, deld.	34.73
Swedeland, Pa., ovens	31.00
Terre Haute, Ind., ovens	31.25

*Or within $5.15 freight zone from works.

Coal Chemicals

(Representative prices)

Cents per gal., f.o.b. tank cars or tank trucks, plant

Pure benzene	31.00
Xylene, industrial grade	29.00
Creosote	22.00
Naphthalene, 78 deg	5.00
Toluene, one deg. (del. east of Rockies)	25.00

Cents per lb, f.o.b. tank cars or tank trucks, del.

Phenol, 90 per cent grade	15.50

Per net ton bulk, f.o.b. cars or trucks, plant

Ammonium sulfate, regular grade	$32.00

Ferroalloys

MANGANESE ALLOYS

Spiegeleisen: Carlot, per gross ton, Palmerton, Neville Island, Pa. 21-23% Mn, $105; 19-21% Mn, 1-3% Si, $102.50; 16-19% Mn, $100.50.

Standard Ferromanganese: (Mn 74-76%, C 7% approx) base price per net ton, $245, Johnstown, Duquesne, Sheriden, Neville Island, Pa.; Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Add or subtract $2 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively. (Mn 79-81%). Lump $253 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 79%, fractions in proportion to nearest 0.1%.

High-Grade Low-Carbon Ferromanganese: (Mn 85-95%). Carload, lump, bulk, max 0.07% C, 35.1c per lb of contained Mn, carload packed 36.4c, ton lots 37.9c, less ton 39.1c. Delivered. Deduct 1.5c for max 0.15% C grade from above prices, 3c for max 0.03% C, 3.5c for max 0.5% C, and 6.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.25-1.5%, Si 1.5% max). Carload, lump, bulk, 25.5c per lb of contained Mn, packed, carload 26.8c, ton lot 28.4c, less ton 29.6c. Delivered. Spot, add 0.25c.

Manganese Metal: 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max, C 0.2%). Carload, lump, bulk, 45c per lb of metal; packed, 45.75c; ton lot 47.25c; less ton lot 49.25c. Delivered. Spot, add 2c.

Electrolytic Manganese Metal: Min carload, bulk, 33.25c; 2000 lb to min carload, 36c; less ton, 38c; 50 lb cans, add 0.5c per lb. Premium for hydrogen-removed metal, 0.75c per lb. Prices are f.o.b. cars, Knoxville, Tenn., freight allowed to St. Louis or any point east of Mississippi River; or f.o.b. Marietta, O., freight allowed.

Silicomanganese: (Mn 65-68%). Carload, lump, bulk 1.50% C grade, 18-20% Si, 12.8c per lb of alloy. Packed, c.l. 14c, ton 14.45c, less ton 15.45c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. For 3% grade, Si 12-14.5%, deduct 0.4c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lot, 2" x D, $1.50 per lb of contained Ti; less ton to 300 lb, $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lot $1.35, less ton to 300 lb $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract min c.l. $240 per ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi River and north of Baltimore and St. Louis. Spot, $245.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4%). Contract, c.l. $290 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed. Spot, $295.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l. lump, bulk 28.75c per lb of contained Cr; c.l. packed 30.30c, ton lot 32.05c; less ton 33.45c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: Cr 63-66% (Simplex), carload, lump, bulk, C 0.025% max, 36.75c per lb contained Cr; 0.010% max, 37.75c. Ton lot, add 3.5c; less ton, add 5.2c. Delivered.

Cr 67-71%, carload, lump, bulk, C 0.02% max, 41.00c per lb contained Cr; 0.025% max, 39.75c; 0.05% max, 39.00c; 0.10% max, 38.50c; 0.20% max, 38.25c; 0.50% max, 38.00c; 1.0% max, 37.75c; 1.5% max, 37.50c; 2.0% max, 37.25c. Ton lot, add 3.4c; less ton lot, add 5.1c. Delivered.

Foundry Ferrochrome, High-Carbon: (Cr 61-66%, C 5-7%, Si 7-10%). Contract, c.l., 2 in. x D, bulk 30.8c per lb of contained Cr. Packed, c.l. 32.4c, ton 34.2c, less ton 35.7c. Delivered. Spot, add 0.25c.

Foundry Ferrosilicon Chrome: (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carload packed, 8M x D, 21.25c per lb of alloy, ton lot 22.50c; less ton lot 23.70c. Delivered. Spot, add 0.25c.

Ferrochrome-Silicon: Cr. 39-41%, Si 42-45%, C 0.05% max or Cr 33-36%, Si 45-48%, C 0.05% max. Carload, lump, bulk, 3" x down and 2" x down, 28.25c per lb contained Cr, 14.60c per lb contained Si, 0.75" x down 29.40c per lb contained Cr, 14.60c per lb contained Si.

Chromium Metal, Electrolytic: Commercial grade, (Cr 99.8% min, metallic basis, Fe 0.2% max). Contract, carlot, packed 2" x D plate (about ¼" thick) $1.15 per lb, ton lot $1.17, less ton lot $1.19. Delivered. Spot, add 5c.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth grade (V 50-55%, Si 8% max, C 3% max). Contract, any quantity, $3.20 per lb of contained V. Delivered. Spot, add 10c. **Special Grade:** (V 50-55% or 70-75%, Si 2 % max, C 0.5% max) $3.30. **High Speed Grade:** (V 50-55% or 70-75%, Si 1.50% max, C 0.20% max) $3.40.

Grainal: Vanadium Grainal No. 1 $1.05 per lb; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract less carload lot, packed, $1.38 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

50% Ferrosilicon: Contract, carload, lump, bulk, 14.6c per lb of contained Si. Packed c.l. 17.1c, ton lot 18.55c, less ton 20.20c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.45c to 50% ferrosilicon prices.

65% Ferrosilicon: Contract, carload, lump, bulk, 15.75c per lb contained silicon. Packed, c.l. 17.75c, ton lot 19.55c, less ton 20.9c. Delivered. Spot, add 0.35c.

75% Ferrosilicon: Contract, carload, lump, bulk, 16.9c per lb of contained Si. Packed, c.l. 18.8c, ton lot 20.45c, less ton 21.7c. Delivered. Spot, add 0.3c.

90% Ferrosilicon: Contract, carload, lump, bulk, 20c per lb of contained Si. Packed c.l. 21.65c, ton lot 23.05c, less ton 24.1c. Delivered. Spot, add 0.25c.

Silicon Metal: (98% min Si, 1.00% max Fe, 0.07% max Ca). C.l. lump, bulk, 21.5c per lb of Si. Packed, c.l. 23.15c, ton lot 24.45c, less ton 25.45c. Add 0.5c for max 0.03% Ca grade. Add 0.5c for 0.50% Fe grade analyzing min 98.25% min Si.

Alsifer: (Approx 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.85c per lb of alloy; ton lot, packed, 10.85c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 39-43%, C 0.20% max). Contract, c.l. lump, bulk, 9.25c per lb of alloy. Packed, c.l. 10.45c, ton lot 11.6c, less ton 12.45c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Contract, carload, lump, packed 27.25c per lb of alloy, ton lot 28.4c, less ton 29.65c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: 100 lb or more packed (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, $1.20 per lb of alloy; less than 100 lb $1.30. Delivered. Spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over are as follows: Grade A (10-14% B) 85c per lb; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4 % B, 40 to 45% Si). Carload, bulk, lump, or 3" x D, $5.25 per lb of contained B. Packed, carload $5.40, ton to c.l. $5.50, less ton $5.60. Delivered.

Carbortam: (B 1 to 2%). Contract, lump, carload $320 per ton, f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%) Contract, carload, lump, bulk 23c per lb of alloy, carload packed 24.25c, ton lot 26.15c, less ton 27.15c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.5-3%). Contract, carload, lump, bulk 24c per lb of alloy, carload packed 25.65c, ton lot 27.95c, less ton 29.45c. Delivered. Spot, add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx 3¾ lb each and containing 2 lb of Cr). Contract, carload, bulk 19.60c per lb of briquet, in bags 20.70c; 3000 lb to c.l. pallets 20.80c; 2000 lb to c.l. in bags 21.90c; less than 2000 lb in bags 22.80c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx 3 lb and containing 2 lb of Mn). Contract, carload, bulk 14.8c per lb of briquet; c.l., packed, bags 16c; 3000 lb to c.l., pallets 16c; 2000 lb to c.l., bags 17.2c; less ton 18.1c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx 3½ lb and containing 2 lb of Mn and approx ½ lb of Si). Contract, c.l. bulk 15.1c per lb of briquet; c.l. packed, bags 16.3c, 3000 lb to c.l., pallets 16.3c; 2000 lb to c.l., bags 17.5c; less ton 18.4c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx 5 lb and containing 2 lb of Si and small sizes, weighing approx 2½ lb and containing 1 lb of Si). Contract, carload, bulk 8c per lb of briquet; packed, bags 9.2c; 3000 lb to c.l., pallets 9.6c; 2000 lb to c.l., bags 10.8c; less ton 11.7c. Delivered. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each). $1.49 per lb of Mo contained, f.o.b. Langeloth, Pa.

Titanium Briquets: Ti 98.27%, $1 per lb, f.o.b. Niagara Falls, N. Y.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%). 5000 lb W or more $2.15 per lb (nominal) of contained W. Delivered.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 50-60%, Si 8% max, C 0.4% max). Ton lots 2" x D, $4 per lb of contained Cb; less ton lots $4.05 (nominal). Delivered.

Ferrotantalum Columbium: (Cb 40% approx, Ta 20% approx, and Cb plus Ta 60% min, C 0.30% max). Ton lots 2" x D, $3.80 per lb of contained Cb plus Ta, delivered; less ton lots $3.85 (nominal).

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Contract, c.l. packed ½-in. x 12 M 20.00c per lb of alloy, ton lot 21.15c, less ton 22.40c. Delivered. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 20c per lb of alloy, ton lot 21.15c; less ton lot 22.4c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-3 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 18.45c per lb of alloy; ton lot 19.95c; less ton lot 21.20c, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis.

Simanal: (Approx 20% each Si, Mn, Al; bal Fe). Lump, carload, bulk 19.25c. Packed c.l. 20.25c, 2000 lb to c.l. 21.25c; less than 2000 lb 21.75c per lb of alloy. Delivered.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $5 for each 1% of P above or below the base). Carload, bulk, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., $120 per gross ton.

Ferromolybdenum: (55-75%). Per lb of contained Mo, in 200-lb container, f.o.b. Langeloth and Washington, Pa. $1.76 in all sizes except powdered which is $1.82.

Technical Molybdic-Oxide: Per lb of contained Mo, in cans, $1.47; in bags, $1.46, f.o.b. Langeloth and Washington, Pa.

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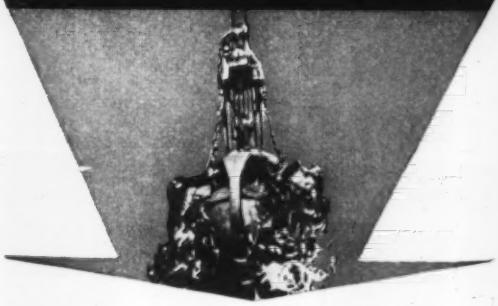

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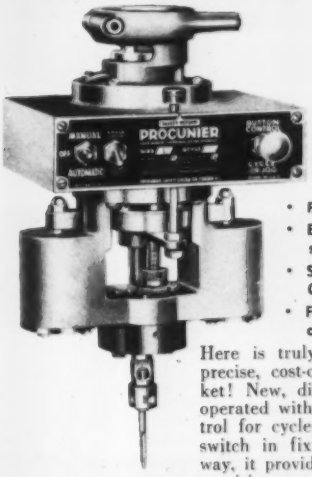

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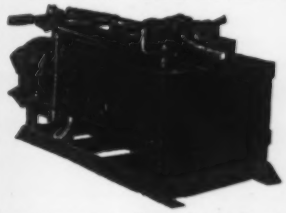

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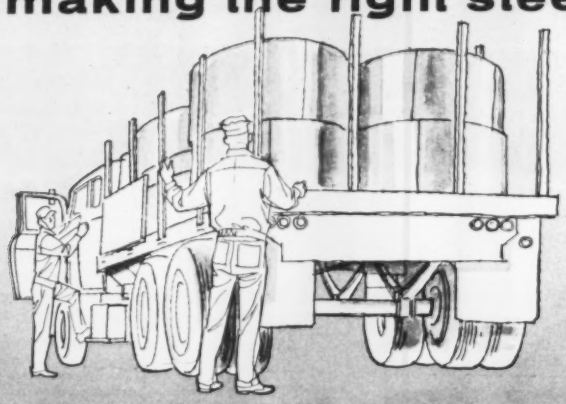

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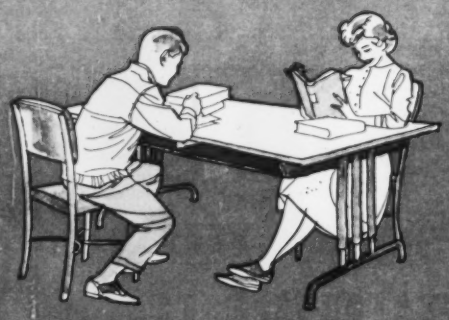

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New Strength Developing in Scrap

STEEL's composite on No. 1 heavy melting advances $1, scoring third straight weekly increase despite sluggish mill buying. Rising steel production reflected

Scrap Prices, Page 138

Philadelphia—Prices jumped upward last week. Tightening markets in steel products, and substantial export business are making the scrap dealers "more optimistic than at any time in the last year."

New York—Improvement in the steel outlook is imparting further strength to scrap. Brokers have advanced their buying prices $1 a ton on most major grades of steel scrap, including borings and turnings. Exceptions are low phos structurals, plates, and the stainless grades, which are unchanged. The cast iron grades are steady.

Some scrap is going abroad, mostly to Japan, but not in large volume.

Pittsburgh—The market is stronger, although a major consumer bought scrap for February delivery at the same prices it paid a month ago: $43 for No. 1 heavy melting, $36 for No. 2 heavy melting, and $32 for No. 2 bundles. Brokers are encountering more resistance from some dealers but still manage to fill most of their orders. Industrial and railroad lists are expected to close $2 or $3 above last month's prices. Mills show decided preference for the better grades.

Chicago—Reports of expanding steelmaking operations in the weeks ahead are stimulating the scrap market. Broker-dealer transactions are up $1 to $2 a ton on leading grades, and some observers feel that the mills would have to pay the higher prices to get melting material. Some mill buying at those prices is rumored.

Cleveland—Bidding on monthend automotive lists will set the price pace over coming weeks. There has been a little more activity in the market recently, though mill buying has continued limited. Rising steelmaking operations (nearing the 80 per cent of capacity mark) are thought likely to increase mill dependence on dealer material to support furnace melts.

Buffalo—Prices have firmed with the rise in steel production. Dealers think the leading steel grades will go up $1 to $2 a ton on February delivery orders. Cast scrap is up $1 a ton on sales of cupola cast at $45. The recent flood slowed the movement of scrap sharply.

Cincinnati—Brokers have raised their buying price $1 a ton on No. 1 heavy melting steel, offering $39-$40 in anticipation of early entrance of district mills into the mar-

(*Please turn to Page* 143)

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Iron and Steel Scrap

Consumer prices per gross ton, except as otherwise noted, including brokers' commission, as reported to STEEL, Jan. 28, 1959. *Changes shown in italics.*

STEELMAKING SCRAP COMPOSITE

Jan. 28	$41.67
Jan. 21	40.67
Dec. Avg.	39.47
Jan. 1958	34.10
Jan. 1954	29.05

Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania.

PITTSBURGH

No. 1 heavy melting	43.00-44.00
No. 2 heavy melting	35.00-36.00
No. 1 dealer bundles	44.00-45.00
No. 2 bundles	31.00-32.00
No. 1 busheling	43.00-44.00
No. 1 factory bundles	48.00-49.00
Machine shop turnings	*22.00-23.00*
Mixed borings, turnings	*22.00-23.00*
Short shovel turnings	25.00-26.00
Cast iron borings	25.00-26.00
Cut structurals:	
2 ft and under	49.00-50.00
3 ft lengths	48.00-49.00
Heavy turnings	*36.00-37.00*
Punchings & plate scrap	*50.00-51.00*
Electric furnace bundles	*50.00-51.00*

Cast Iron Grades

No. 1 cupola	44.00-45.00
Stove plate	41.00-42.00
Unstripped motor blocks	31.00-32.00
Clean auto cast	39.00-40.00
Drop broken machinery	51.00-52.00

Railroad Scrap

No. 1 R.R. heavy melt.	46.00-47.00
Rails, 2 ft and under	56.00-57.00
Rails, 18 in. and under	57.00-58.00
Random rails	54.00-55.00
Railroad specialties	50.00-51.00
Angles, splice bars	50.00-51.00
Rails, rerolling	58.00-59.00

Stainless Steel Scrap

18-8 bundles & solids	225.00-230.00
18-8 turnings	125.00-130.00
430 bundles & solids	125.00-130.00
430 bundles	55.00-65.00

CHICAGO

No. 1 hvy melt, indus.	43.00-44.00
No. 1 heavy melt, dealer	41.00-42.00
No. 2 heavy melting	36.00-37.00
No. 1 factory bundles	46.00-47.00
No. 1 dealer bundles	43.00-44.00
No. 2 bundles	30.00-31.00
No. 1 busheling, indus.	43.00-44.00
No. 1 busheling, dealer	41.00-42.00
Machine shop turnings	21.00-22.00
Mixed borings, turnings	23.00-24.00
Short shovel turnings	23.00-24.00
Cast iron borings	23.00-24.00
Cut structurals, 3 ft	48.00-49.00
Punchings & plate scrap	49.00-50.00

Cast Iron Grades

No. 1 cupola	47.00-48.00
Stove plate	44.00-45.00
Unstripped motor blocks	38.00-39.00
Clean auto cast	55.00-56.00
Drop broken machinery	55.00-56.00

Railroad Scrap

No. 1 R.R. heavy melt.	45.00-46.00
R.R. malleable	57.00-58.00
Rails, 2 ft and under	58.00-59.00
Rails, 18 in. and under	59.00-60.00
Angles, splice bars	54.00-55.00
Axles	*71.00-72.00*
Rails, rerolling	62.00-63.00

Stainless Steel Scrap

18-8 bundles & solids	215.00-220.00
18-8 turnings	115.00-120.00
430 bundles & solids	115.00-120.00
430 turnings	*55.00-60.00*

YOUNGSTOWN

No. 1 heavy melting	*46.00-47.00*
No. 2 heavy melting	*32.00-33.00*
No. 1 busheling	*46.00-47.00*
No. 1 bundles	*46.00-47.00*
No. 2 bundles	*32.00-33.00*
Machine shop turnings	*18.00-19.00*
Short shovel turnings	*23.00-24.00*
Cast iron borings	*23.00-24.00*
Low phos.	*46.00-47.00*
Electric furnace bundles	*46.00-47.00*

Railroad Scrap

No. 1 R.R. heavy melt.	*47.00-48.00*

CLEVELAND

No. 1 heavy melting	*43.00-44.00*
No. 2 heavy melting	*28.00-29.00*
No. 1 factory bundles	43.00-44.00
No. 1 bundles	*43.00-44.00*
No. 2 bundles	*31.00-32.00*
No. 1 busheling	*43.00-44.00*
Machine shop turnings	*17.00-18.00*
Short shovel turnings	*23.00-24.00*
Mixed borings, turnings	*23.00-24.00*
Cast iron borings	*23.00-24.00*
Cut foundry steel	*42.00-43.00*
Cut structurals, plates 2 ft and under	*51.00-52.00*
Low phos. punchings & plate	*44.00-45.00*
Alloy free, short shovel turnings	*25.00-26.00*
Electric furnace bundles	*43.00-44.00*

Cast Iron Grades

No. 1 cupola	45.00-46.00
Charging box cast	37.00-38.00
Heavy breakable cast	37.00-38.00
Stove plate	43.00-44.00
Unstripped motor blocks	33.00-34.00
Brake shoes	36.00-37.00
Clean auto cast	49.00-50.00
Burnt cast	33.00-34.00
Drop broken machinry	50.00-51.00

Railroad Scrap

R.R. malleable	*66.00-67.00*
Rails, 2 ft and under	*60.00-61.00*
Rails, 18 in. and under	*61.00-62.00*
Rails, random lengths	*55.00-56.00*
Cast steel	*52.00-53.00*
Railroad specialties	*53.00-54.00*
Uncut tires	*46.00-47.00*
Angles, splice bars	*53.00-54.00*
Rails, rerolling	*59.00-60.00*

Stainless Steel

(Brokers' buying prices; f.o.b. shipping point)

18-8 bundles, solids	*210.00-215.00*
18-8 turnings	*120.00-125.00*
430 clips, bundles, solids	*115.00-125.00*
430 turnings	*45.00-55.00*

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	37.00
No. 2 heavy melting	35.00
No. 1 bundles	39.00
No. 2 bundles	28.00
No. 1 busheling	39.00
Machine shop turnings	*21.00*
Short shovel turnings	*23.00*

Cast Iron Grades

No. 1 cupola	48.00
Charging box cast	40.00
Heavy breakable cast	38.00
Unstripped motor blocks	39.00
Clean auto cast	48.00
Stove plate	44.00

Railroad Scrap

No. 1 R.R. heavy melt.	45.50
Rails, 18 in. and under	52.00†
Rails, random lengths	47.50
Rails, rerolling	*60.00*
Angles, splice bars	*49.00*

BIRMINGHAM

No. 1 heavy melting	33.00-34.00
No. 2 heavy melting	27.00-28.00
No. 1 bundles	33.00-34.00
No. 2 bundles	21.00-22.00
No. 1 busheling	33.00-34.00
Cast iron borings	14.00-15.00
Machine shop turnings	21.00-22.00
Short shovel turnings	22.00-23.00
Bars, crops and plates	42.00-43.00
Structurals & plates	41.00-42.00
Electric furnace bundles	37.00-38.00
Electric furnace:	
2 ft and under	35.00-36.00
3 ft and under	34.00-35.00

Cast Iron Grades

No. 1 cupola	53.00-54.00
Stove plate	53.00-54.00
Charging box cast	29.00-30.00
Unstripped motor blocks	40.00-41.00
No. 1 wheels	41.00-42.00

Railroad Scrap

No. 1 R.R. heavy melt.	38.00-39.00
Rails, 18 in. and under	*48.00-49.00*
Rails, rerolling	56.00-57.00
Rails, random lengths	*43.00-44.00*
Angles, splice bars	42.00-43.00

PHILADELPHIA

No. 1 heavy melting	*39.00*
No. 2 heavy melting	*36.00*
No. 1 bundles	*40.00*
No. 2 bundles	*24.00-25.00*
No. 1 busheling	*40.00*
Electric furnace bundles	*41.00*
Mixed borings, turnings	*21.00-22.00*
Short shovel turnings	*24.00-25.00*
Machine shop turnings	*21.00-22.00*
Heavy turnings	*35.00-36.00*
Structurals & plate	*43.00-44.00*
Couplers, springs, wheels	44.00
Rail crops, 2 ft & under	57.00-58.00

Cast Iron Grades

No. 1 cupola	*38.00-39.00*
Heavy breakable cast	*41.00-42.00*
Malleable	*62.00-64.00*
Drop broken machinery	*49.00-50.00*

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	*29.00-30.00*
No. 2 heavy melting	*26.00-27.00*
No. 1 bundles	*29.00-30.00*
No. 2 bundles	*18.00-19.00*
Machine shop turnings	*11.00-12.00*
Mixed borings, turnings	*14.00-15.00*
Short shovel turnings	*15.00-16.00*
Low phos. (structurals & plates)	34.00-35.00

Cast Iron Grades

No. 1 cupola	35.00-36.00
Unstripped motor blocks	23.00-24.00
Heavy breakable	32.00-33.00

Stainless Steel

18-8 sheets, clips, solids	185.00-190.00
18-8 borings, turnings	85.00-90.00
410 sheets, clips, solids	55.00-60.00
430 sheets, clips, solids	75.00-80.00

BUFFALO

No. 1 heavy melting	35.00-36.00
No. 2 heavy melting	29.00-30.00
No. 1 bundles	35.00-36.00
No. 2 bundles	25.00-26.00
No. 1 busheling	35.00-36.00
Mixed borings, turnings	17.00-18.00
Machine shop turnings	15.00-16.00
Short shovel turnings	19.00-20.00
Cast iron borings	17.00-18.00
Low phos. structurals and plate, 2 ft and under	42.00-43.00

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	*44.00-45.00*
No. 1 machinery	*48.00-49.00*

Railroad Scrap

Rails, random lengths	47.00-48.00
Rails, 3 ft and under	53.00-54.00
Railroad specialties	42.00-43.00

CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*39.00-40.00*
No. 2 heavy melting	*34.00-35.00*
No. 1 bundles	*39.00-40.00*
No. 2 bundles	25.00-26.00
No. 1 busheling	*39.00-40.00*
Machine shop turnings	19.00-20.00
Mixed borings, turnings	20.00-21.00
Short shovel turnings	22.00-23.00
Cast iron borings	19.00-20.00
Low phos, 18 in.	*47.00-48.00*

Cast Iron Grades

No. 1 cupola	45.00-46.00
Heavy breakable cast	39.00-40.00
Charging box cast	38.00-39.00
Drop broken machinery	47.00-48.00

Railroad Scrap

No. 1 R.R. heavy melt.	*45.00-46.00*
Rails, 18 in. and under	55.00-56.00
Rails, random lengths	49.00-50.00

HOUSTON

(Brokers' buying prices; f.o.b. cars)

No. 1 heavy melting	33.00
No. 2 heavy melting	30.00
No. 1 bundles	33.00
No. 2 bundles	23.00†
Machine shop turnings	17.00
Short shovel turnings	20.00
Low phos. plates & structurals	39.00†

Cast Iron Grades

No. 1 cupola	42.00
Heavy breakable	27.00-28.00†
Foundry malleable	37.00
Unstripped motor blocks	33.00

Railroad Scrap

No. 1 R.R. heavy melt.	33.00†

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	27.00-28.00
No. 2 heavy melting	*21.00-22.00*
No. 1 bundles	27.00-28.00
No. 1 busheling	*27.00-28.00*
Machine shop turnings	*9.00-10.00*
Short shovel turnings	11.00-12.00
No. 1 cast	33.00
Mixed cupola cast	33.00
No. 1 machinery cast	34.00

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	35.00-36.00
No. 2 heavy melting	22.50-23.50
No. 1 bundles	36.00-37.00
No. 2 bundles	24.00-25.00
No. 1 busheling	35.00-36.00
Machine shop turnings	13.00-14.00
Mixed borings, turnings	13.00-14.00
Short shovel turnings	14.00-15.00

Cast Iron Grades

No. 1 cupola	44.00-45.00
Stove plate	33.00-34.00
Charging box cast	33.00-34.00
Heavy breakable	35.00-36.00
Unstripped motor blocks	22.00-23.00
Clean auto cast	47.00-48.00

SEATTLE

No. 1 heavy melting	31.00
No. 2 heavy melting	29.00
No. 1 bundles	29.00
No. 2 bundles	23.00
Machine shop turnings	9.00-10.00†
Mixed borings, turnings	9.00-10.00†
Electric furnace No. 1	38.00†

Cast Iron Grades

No. 1 cupola	31.00†
Heavy breakable cast	28.00†
Unstripped motor blocks	23.00†
Stove plate (f.o.b.	21.00†

LOS ANGELES

No. 1 heavy melting	36.00
No. 2 heavy melting	34.00
No. 1 bundles	33.00
No. 2 bundles	18.00
Machine shop turnings	15.00
Shoveling turnings	18.00
Cast iron borings	15.00
Cut structurals and plate 1 ft and under	47.00

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	47.00

Railroad Scrap

No. 1 R.R. heavy melt.	38.00

SAN FRANCISCO

No. 1 heavy melting	32.00-34.00
No. 2 heavy melting	30.00-32.00
No. 1 bundles	30.00-32.00
No. 2 bundles	22.00
Machine shop turnings	15.00
Mixed borings, turnings	15.00
Cast iron borings	15.00
Heavy turnings	15.00
Short shovel turnings	15.00
Cut structurals, 3 ft	40.00

Cast Iron Grades

No. 1 cupola	44.00
Charging box cast	34.00
Stove plate	34.00
Heavy breakable cast	28.00
Unstripped motor blocks	31.00
Clean auto cast	40.00
Drop broken machinery	40.00
No. 1 wheels	34.00

HAMILTON, ONT.

(Brokers' buying prices)

No. 1 heavy melting	34.50
No. 2 heavy melting	30.50
No. 1 bundles	34.50
No. 2 bundles	25.00
Mixed steel scrap	26.50
Mixed borings, turnings	15.00
Busheling, new factory:	
Prepared	34.50
Unprepared	28.50
Short steel turnings	19.00

Cast Iron Grades‡

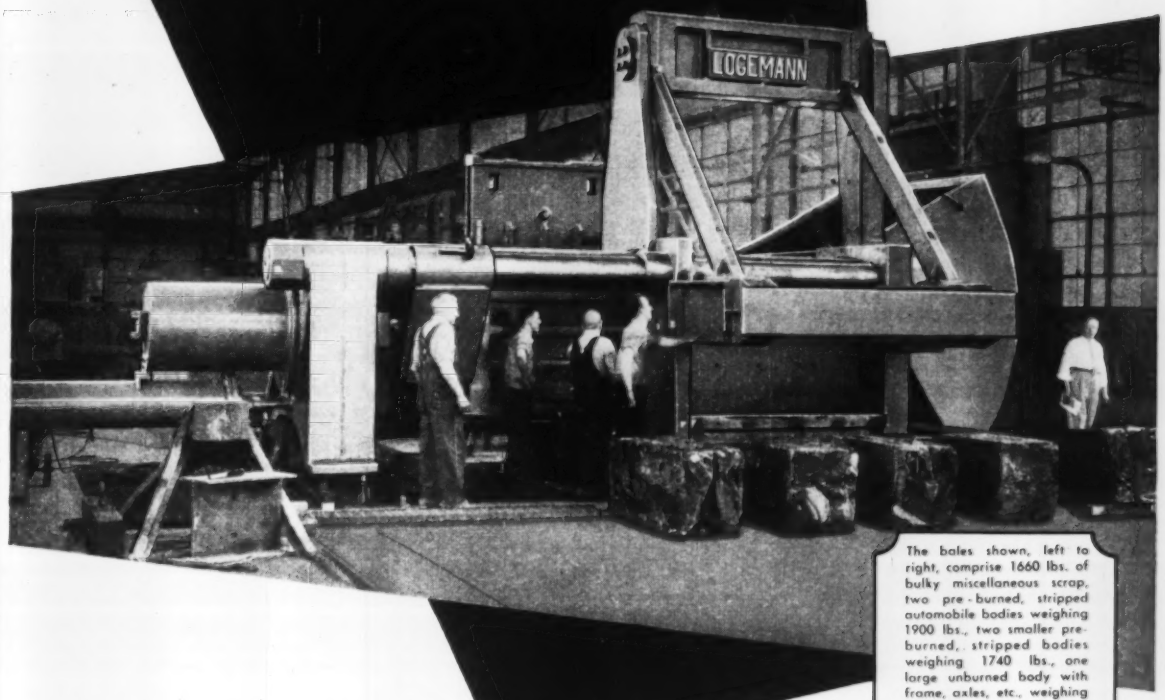
No. 1 machinery cast	39.00-41.00

†Nominal.
‡F.o.b. Hamilton, Ont.

LOGEMANN *presents*

the new giant triple-compression 4000-P Series of

SCRAP PRESSES



The bales shown, left to right, comprise 1660 lbs. of bulky miscellaneous scrap, two pre-burned, stripped automobile bodies weighing 1900 lbs., two smaller pre-burned, stripped bodies weighing 1740 lbs., one large unburned body with frame, axles, etc., weighing 2280 lbs., and another unburned lighter body with frame, axles, etc., weighing 2020 lbs.

- **Bale Densities are Extremely High!**
- **Giant Press Box is 20 ft. x 7 ft. x 5 ft.**
- **Two 150 HP Pumps Generate Hydraulic Pressure**

In this Logemann Scrap Press compressed bales measure 24 inches by 24 inches by a variable third dimension which is determined by the character and quantity of scrap charged. The first or gathering ram compresses the load of scrap from 20 ft. to 2 ft. . . . the intermediate side ram reduces the cross-dimension from 7 ft to 2 ft. . . . finally the third or finishing ram moves upward, to compress the vertical dimension into an extremely dense bale, ready for remelting. The cover is then withdrawn and the finishing ram elevates the compressed bale level with the top of the box, to allow the cover to push it off for loading into cars.

Two large 150 HP pumps generate hydraulic pressure for operating the press-rams at high pressures. Three smaller pumps are used to operate the press cover and the loading hopper. This hopper can be filled with miscellaneous scrap while the press is making a bale, and then dumped quickly into the box as soon as the preceding bale has been discharged.

The large pumps give rapid movement to all rams, and to handle their fluid delivery the operating-valves are proportionately over-size. These valves are operated by compressed air and easily controlled from a remote stand, through a bank of electrical switches and push-buttons, in front of the operator.

This same press can be used for baling bodies and extremely bulky scrap, also for making standard size, high-density bales of new sheet clips.

We are prepared to build many smaller sizes or larger, if required, to meet your specific requirements. You are invited to present your problem for discussion.

Write for details about the newly developed 3500-P series with tamping cover and side bale ejection and the new giant double compression press with box 20 ft. long, 7½ ft. wide, and 5 ft. deep.

LOGEMANN BROTHERS CO.

3126 W. BURLEIGH STREET • MILWAUKEE 10, WISCONSIN

Small Firms Win Guarantees

Alcoa agrees to set aside 24,000 tons of aluminum yearly for use by small, nonintegrated fabricators. GSA now working with other producers on similar agreements

Nonferrous Metal Prices, Pages 142 & 143

SMALL business now has a guaranteed (though limited) source of aluminum.

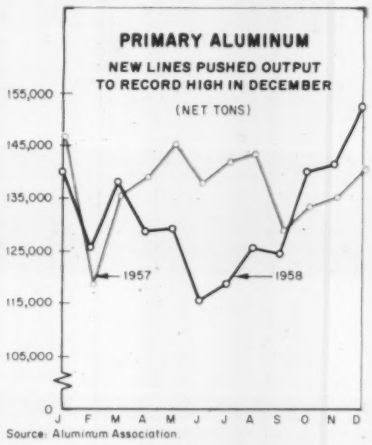
Late last month, Aluminum Co. of America signed an agreement with the General Services Administration. It reads: Beginning now and continuing through the first quarter of 1972, Alcoa will set aside 24,000 tons of metal yearly for nonintegrated users who qualify as small business concerns. (A small business in the fabricated metal product field is one employing less than 500 workers. It's less than 250 employees for firms making doors, sash, and trim; enameling; foil; hardware; and screw machine products.)

Look for similar agreements to be made with other primary aluminum producers. GSA is negotiating with Reynolds Metals Co., Kaiser Aluminum & Chemical Corp., and Harvey Aluminum Co.

• **Background**—The move amounts to a renegotiation of contracts signed during the Korean War period. At that time Alcoa, Kaiser, and Reynolds were asked by Uncle Sam to expand their facilities so adequate metal would be available for military needs. As an incentive, the government inserted "put right" agreements into the contracts—any unsold metal resulting from the expansions could be tendered to the government over a specified period.

In return, producers agreed that at the end of the period (generally five years), they would make some aluminum available to nonintegrated users: An amount equal to 25 per cent of the annual capacity of the added production facilities for 15 years. In 1957, the figure was increased to 35 per cent.

Some members of Congress and certain small fabricators were unhappy with the arrangement. At recent Yates Committee hearings on Capitol Hill it was argued that "firms the size of either General Motors Corp. or Ford Motor Co. are considered nonintegrated users under the terms of the contract." Their fear was that in time of a shortage, the metal might be gobbled up by the industry giants. Result: Congress pressured GSA to renegotiate with the producers so at least 10 per cent would be earmarked for small business.



Source: Aluminum Association

• **Significance**—Now there's plenty of aluminum for anyone who wants it. Primary producers cut their output to 1,564,341 tons last year and still didn't sell all the metal. They tendered around 330,000 tons to the government under "put right" agreements.

This year, demand will be up 10 to 25 per cent, predict metalmen. But U. S. capacity is 2,184,250 tons and will rise to 2,604,500 tons in the 1959-60 period. STEEL estimates the industry is now operating at an annual rate of around 1,824,000 tons.

"Puts" ended in 1958 for Alcoa and Kaiser. This year, Reynolds can tender 38,000 tons, and Harvey can technically "put" its entire 54,000 ton output.

Congress took all those negative factors into account and dismissed them as temporary conditions when it asked GSA to renegotiate. As one Congressional source puts it: "Aluminum has so many large usage potentials (like the auto engine block) on the horizon it would take only a few major breakthroughs to put the metal in tight supply again. That's why we want a guaranteed supply set aside so the small business firm won't get swallowed up in a rash of large scale applications."

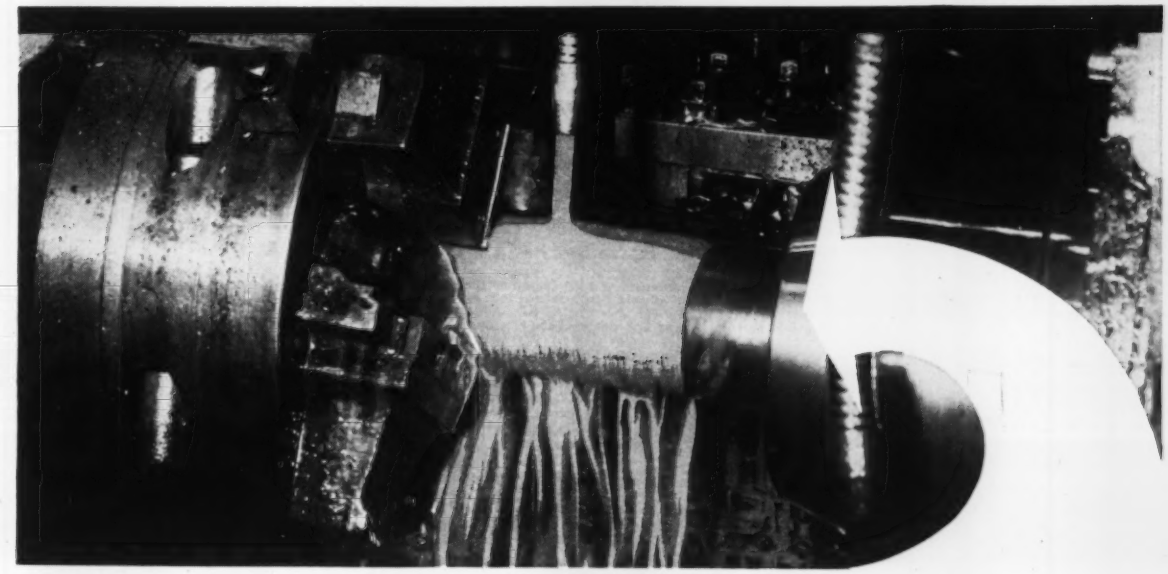
• **Future** — Look for the Yates Committee to hold more hearings on aluminum. Congressmen are evidently worried about charges from some independent fabricators that primary producers' pricing practices, "hot metal" contracts, and scrap buying are "squeezing them out."

NONFERROUS PRICE RECORD

	Price Jan. 28	Last Change	Previous Price	Dec. Avg	Nov. Avg	Jan., 1958 Avg
Aluminum	**24.70**	**Aug. 1, 1958**	**24.00**	**24.700**	**24.700**	**26.000**
Copper	29.00-30.00	Jan. 28, 1959	29.00-29.50	28.856	29.415	25.135
Lead	11.80	Jan. 21, 1959	12.80	12.800	12.800	12.800
Magnesium	**35.25**	**Aug. 13, 1956**	**33.75**	**35.250**	**35.250**	**35.250**
Nickel	**74.00**	**Dec. 6, 1956**	**64.50**	**74.000**	**74.000**	**74.000**
Tin	100.25	Jan. 28, 1959	100.00	99.019	99.034	92.933
Zinc	**11.50**	**Nov. 7, 1958**	**11.00**	**11.500**	**11.386**	**10.000**

Quotations in cents per pound based on: COPPER, mean of primary and secondary, deld. Conn. Valley; LEAD, common grade, deld. St. Louis; ZINC, prime western, E. St. Louis; TIN, Straits, deld. New York; NICKEL, electrolytic cathodes, 99.9%, base size at refinery, unpacked; ALUMINUM, primary pig, 99.5+%, f.o.b. shipping point; MAGNESIUM, pig, 99.8%, Velasco, Tex.

a "NEW LEAF" in coolants... New 100% Chemi-Cool HOCUT cools... lubricates... prevents rust... stays mint-fresh for life!



No other cutting fluid does so much, so well, for so long... as NEW HOCUT 237

Permanently odor-free—Needs no "additive" to stay clear and fresh-smelling for life. Cannot turn rancid or harm hands. Keeps your shop clean and your operators happy.

Cools work and tools quickly—Faster cooling speeds machining time—prevents welding and chip build-up, and increases tool life.

A lubricant that works—The secret is in new synthetic high-molecular-weight lubricity additive—which, in plain language, means the needed lubrication advantages of a "soluble oil"—with none of the disadvantages.

Protects tools and work from rust—Work coming off the machine is coated with a two-stage rust preventive. Tools, ways, slides and bearings get permanent protection.

Best for economy—Initial cost is only a few pennies per gallon, in the machine. Expense of clogged filters is practically eliminated and filtration speeded up. HOCUT can be used and re-used for months and disposal is never a problem.

For positive proof of new HOCUT's unique properties and economy—in your own plant—call your Houghton Man today. Or write: E. F. Houghton & Co., 303 W. Lehigh Avenue, Philadelphia 33, Pa.

HOCUT 237 ... *a product of*

E. F. HOUGHTON & CO.

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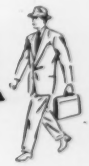

Ready to give you on-the-job service

Nonferrous Metals

Cents per pound, carlots except as otherwise noted.

PRIMARY METALS AND ALLOYS

Aluminum: 99.5%, pigs, 24.70; ingots, 26.80, 30,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 28.60; No. 43, 28.40; No. 195, 29.40; No. 214, 30.20; No. 356, 28.60; 30 or 40 lb ingots.

Antimony: R.M.M. brand, 99.5%, 29.00; Lone Star brand, 29.50, f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 24.50-25.00, New York, duty paid, 10,000 lb or more.

Beryllium: 97% lump or beads, $71.50 per lb, f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $74.75 per lb of contained Be, with balance as Al at market price, f.o.b. shipping point.

Beryllium Copper: 3.75-4.75% Be, $43 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. shipping point.

Bismuth: $2.25 per lb, ton lots.

Cadmium: Sticks and bars, $1.45 per lb deld.

Cobalt: 97.99%, $2.00 per lb for 550-lb keg; $2.02 per lb for 100 lb case; $2.07 per lb under 100 lb.

Columbium: Powder, $55-85 per lb, nom.

Copper: Electrolytic, 29.00 deld.; custom smelters, 30.00; lake, 29.00 deld.; fire refined, 28.75 deld.

Germanium: First reduction, $179.17-197.31 per lb; intrinsic grade, $197.31-220 per lb, depending on quantity.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $70-80 nom. per troy oz.

Lead: Common, 11.80; chemical, 11.90; corroding, 11.90, St. Louis. New York basis, add 0.20.

Lithium: 98 + %, 50-100 lb, cups or ingots, $12; rod, $15; shot or wire, $16. 100-500 lb, cups or ingots, $10.50; rod, $14; shot or wire, $15, f.o.b. Minneapolis.

Magnesium: Pig, 35.25; ingot, 36.00 f.o.b. Velasco, Tex.; 12 in. sticks, 59.00 f.o.b. Madison, Ill.

Magnesium Alloys: AZ91A (diecasting), 40.75 deld.; AZ63A, AZ92A, 9Z91C (sand casting), 40.75, f.o.b. Velasco, Tex.

Mercury: Open market, spot, New York, $218-221 per 76-lb flask.

Molybdenum: Unalloyed, turned extrusion, 3.75-5.75 in. round, $9.60 per lb in lots of 2500 lb or more, f.o.b. Detroit.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 74.00; 10-lb pigs, unpacked, 78.25; "XX" nickel shot, 79.50; "F" nickel shot for addition to cast iron, 74.50; "F" nickel, 5 lb ingots in kegs for addition to cast iron, 75.50. Prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 1.01. Nickel oxide sinter at Buffalo, New York, or other established U. S. points of entry, contained nickel, 69.60.

Osmium: $70-100 per troy oz nom.

Palladium: $15-17 per troy oz.

Platinum: $52-55 per troy oz from refineries.

Radium: $16-21.50 per mg radium content, depending on quantity.

Rhodium: $118-125 per troy oz.

Ruthenium: $45-55 per troy oz.

Selenium: $7.00 per lb, commercial grade.

Silver: Open market, 90.375 per troy oz.

Sodium: 17.00 c.l.; 19.00-19.50 l.c.l.

Tantalum: Rod, $60 per lb; sheet, $55 per lb.

Tellurium: $1.65-1.85 per lb.

Thallium: $7.50 per lb.

Tin: Straits, N. Y. spot, 100.25; prompt, 100.125.

Titanium: Sponge, 99.3 + % grade A-1, ductile (0.3% Fe max.), $1.62-1.82; grade A-2 (0.5% Fe max.), $1.70 per lb.

Tungsten: Powder, 89.8%, carbon reduced, 1000-lb lots, $3.15 per lb nom., f.o.b. shipping point; less than 1000 lb, add 15.00; 99 + % hydrogen reduced, $3.30-3.80.

Zinc: Prime Western, 11.50; brass special, 11.75; intermediate, 12.00, East St. Louis, freight allowed over 0.50 per lb. New York basis, add 0.50. High grade, 12.50; special high grade, 12.75 deld. Diecasting alloy ingot No. 3, 14.00; No. 2, 14.25; No. 5, 14.50 deld.

Zirconium: Reactor grade sponge, 100 lb or less, $7 per lb; 100-500 lb, $6.50 per lb; over 500 lb, $6 per lb.

(Note: Chromium, manganese, and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloys, 23.875-25.25; No. 12 foundry alloy (No. 2 grade), 21.75-22.00; 5% silicon alloy, 0.60 Cu max., 24.75-25.00; 13 alloy 0.60 Cu max., 24.75-25.00; 195 alloy, 25.25-26.00; 108 alloy, 22.25-22.50. Steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 23.50; grade 2, 22.00; grade 3, 21.00; grade 4, 19.00.

Brass Ingot: Red brass, No. 115, 28.00; tin bronze, No. 225, 37.50; No. 245, 32.25; high-leaded tin bronze, No. 305, 32.25; No. 1 yellow, No. 405, 23.00; manganese bronze, No. 421, 24.75.

Magnesium Alloy Ingot: AZ63A, 37.50; AZ91B, 37.50; AZ91C, 41.25; AZ92A, 37.50.

NONFERROUS PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb; nom. 1.9% Be alloy.) Strip, $1.885, f.o.b. Temple, Pa., or Reading, Pa.; rod, bar, wire, $1.865, f.o.b. Temple, Pa.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 20,000-lb lots, 34.35; l.c.l., 34.98. Weatherproof, 20,000-lb lots, 35.54; l.c.l., 36.29.

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more, $17.50 per cwt; pipe, full coils, $17.50 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill.) Sheet and strip, $6.90-14.35; sheared mill plate, $5.00-8.50; wire, $5.50-9.50; forging billets, $3.55-4.10; hot-rolled and forged bars, $4.25-5.40.

ZINC

(Prices per lb, c.l., f.o.b. mill.) Sheets, 26.00; ribbon zinc in coils, 21.50; plates, 20.00.

ZIRCONIUM

Plate, $12.50-19.20; H.R. strip, $12.50-22.90; C.R. strip, $15.90-31.25; forged or H.R. bars, $11.00-17.40.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheets, C.R.	126	106	128
Strip, C.R.	124	108	138
Plate, H.R.	120	105	121
Rod, Shapes, H. R.	107	89	109
Seamless Tubes	157	129	200

ALUMINUM

Sheets: 1100, 3003 and 5005 mill finish (30,000 lb base; freight allowed).

Thickness Range, Inches	Flat Sheet	Coiled Sheet
0.250-0.136	42.80-47.30	....
0.136-0.096	43.20-48.30	....
0.126-0.103	....	39.20-39.80
0.096-0.077	43.80-50.00	39.30-40.00
0.077-0.068	44.30-52.20	....
0.077-0.061	....	39.50-40.70
0.068-0.061	44.30-52.20	....
0.061-0.048	44.90-54.40	40.10-41.80
0.048-0.038	45.40-57.10	40.60-43.20
0.038-0.030	45.70-62.00	41.00-45.70
0.030-0.024	46.20-53.70	41.30-45.70
0.024-0.019	46.90-56.80	42.40-44.10
0.019-0.017	47.70-54.10	43.00-44.70
0.017-0.015	48.60-55.00	43.80-45.50
0.015-0.014	49.60	44.80-46.50
0.014-0.012	50.80	45.50
0.012-0.011	51.80	46.70
0.011-0.0095	53.50	48.10
0.0095-0.0085	54.60	49.60
0.0085-0.0075	56.20	50.80
0.0075-0.007	57.70	52.30
0.007-0.006	59.30	53.70

ALUMINUM (continued)

Plates and Circles: Thickness 0.250-3 in. 24-60 in. width or diam., 72-240 in. lengths.

Alloy	Plate Base	Circle Base
1100-F, 3003-F	42.40	47.20
5050-F	43.50	48.30
3004-F	44.50	50.20
5052-F	45.10	50.90
6061-T6	45.60	51.70
2024-T4	49.30	56.10
7075-T6*	57.60	64.70

*24-48 in. width or diam., 72-180 in. lengths

Screw Machine Stock: 30,000 lb base.

Diam. (in.) or across flats*	Round 2011-T3	Round 2017-T4	Hexagonal 2011-T3	Hexagonal 2017-T4
0.125	76.90	73.90	....	....
0.250	62.00	60.20	89.10	76.80
0.375	61.20	60.00	73.50	68.50
0.500	61.20	60.00	73.50	68.50
0.625	61.20	60.00	69.80	64.20
0.750	59.70	58.40	63.60	60.40
0.875	59.70	58.40	63.60	60.40
1.000	59.70	58.40	63.60	60.40
1.125	57.30	56.10	61.50	58.30
1.250	57.30	56.10	61.50	58.30
1.350	57.30	56.10	61.50	58.30
1.500	57.30	56.10	61.50	58.30
1.625	55.00	53.60	....	56.20
1.750	55.00	53.60	60.30	56.20
1.875	55.00	53.60	....	56.20
2.000	55.00	53.60	60.30	56.20
2.125	53.50	52.10	....	....
2.250	53.50	52.10	....	56.20
2.375	53.50	52.10	....	....
2.500	53.50	52.10	....	56.20
2.625	....	50.40	....	....
2.750	51.90	50.40	....	56.20
2.875	....	50.40	....	....
3.000	51.90	50.40	....	56.20
3.125	....	50.40	....	....
3.250	....	50.40	....	....
3.375	....	50.40	....	....

*Selected sizes.

Forging Stock: Round, Class 1, random lengths, diam. 0.375-8 in., "F" temper; 2014, 42.20-55.00; 6061, 41.60-55.00; 7075, 61.60-75.00; 7070, 66.60-80.00.

Pipe: ASA schedule 40, alloy 6063-T6 standard length, plain ends, 90,000 lb base, dollars per 100 ft. Nominal pipe sizes: ⅜ in., 18.85; 1 in., 29.75; 1¼ in., 40.30; 1½ in., 48.15; 2 in., 58.30; 4 in., 160.20; 6 in., 287.55; 8 in., 432.70.

Extruded Solid Shapes:

Factor	Alloy 6063-T5	Alloy 6062-T6
9-11	42.70-44.20	51.30-55.50
12-14	42.70-44.20	52.00-56.50
15-17	42.70-44.20	53.20-58.20
18-20	43.20-44.70	55.20-60.80

MAGNESIUM

Sheet and Plate: AZ31B standard grade, 0.32 in., 103.10; .081 in., 77.90; .125 in., 70.40; .188 in., 69.00; .250-2.0 in., 67.90. AZ31B spec. grades, .032 in., 171.30; .081 in., 108.80; .125 in., 98.10; .188 in., 95.70; .250-2.00 in., 93.30. Tread plate, 60-192 in. lengths, 24-72 in. widths; .125 in., 74.90; .188 in., 71.70-72.10; .25-.75 in., 70.60-71.60. Tooling plate, .25-.30 in., 73.00.

Extruded Solid Shapes:

Factor	Com. Grade (AZ31C)	Spec. Grade (AZ31B)
6-8	69.60-72.40	84.60-87.40
12-14	70.70-73.00	85.70-88.00
24-26	75.60-76.30	90.60-91.30
36-38	89.20-90.30	104.20-105.30

NONFERROUS SCRAP

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots.)

Copper and Brass: No. 1 heavy copper and wire, 22.75-23.25; No. 2 heavy copper and wire, 20.75-21.25; light copper, 19.00-19.50; No. 1 composition red brass, 16.50-17.00; No. 1 com-

BRASS MILL PRICES

	MILL PRODUCTS a				SCRAP ALLOWANCES e (Based on copper at 29.00c)		
	Sheet, Strip, Plate	Rod	Wire	Seamless Tubes	Clean Heavy	Rod Ends	Clean Turnings
Copper	53.13b	50.36c	....	53.39	25.000	25.000	24.250
Yellow Brass	46.57	31.22d	47.11	49.98	17.000	16.750	15.250
Low Brass, 80%	49.23	49.17	48.87	52.54	21.250	21.000	20.500
Red Brass, 85%	50.17	50.11	50.71	53.48	22.125	21.875	21.375
Com. Bronze, 90%	51.65	51.59	52.19	54.71	22.875	22.625	22.125
Manganese Bronze	54.98	48.58	50.08	....	17.750	17.500	16.875
Muntz Metal	49.35	44.66	....	....	17.875	17.625	17.125
Naval Brass	51.24	45.05	57.80	54.65	17.625	17.375	16.875
Silicon Bronze	58.27	57.46	57.81	75.95	24.625	24.625	23.625
Nickel Silver, 10%	62.20	66.60	64.03	....	23.875	23.625	11.937
Phos. Bronze	72.59	73.09	72.59	74.27	25.875	25.625	24.625

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. Prices in cents per lb for less than 20,000 lb, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb.

position turnings, 15.50-16.00; new brass clippings, 14.75-15.25; light brass, 11.00-11.50; heavy yellow brass, 12.00-12.50; new brass rod ends, 12.50-13.00; auto radiators, unsweated, 13.00-13.50; cocks and faucets, 13.50-14.00; brass pipe, 13.50-14.00.

Lead: Heavy, 7.50-8.00; battery plates, 3.25-3.75; linotype and stereotype, 9.25-9.75; electrotype, 7.75-8.25; mixed babbitt, 9.25-9.75.

Monel: Clippings, 30.50-31.50; old sheets, 27.00-28.00; turnings, 22.00-23.00; rods, 30.00-31.00.

Nickel: Sheets and clips, 52.00-55.00; rolled anodes, 52.00-55.00; turnings, 37.00-40.00; rod ends, 52.00-55.00.

Zinc: Old zinc, 4.00-4.25; new diecast scrap, 3.75-4.00; old diecast scrap, 2.50-2.75.

Aluminum: Old castings and sheets, 9.75-10.25; clean borings and turnings, 6.25-6.75; segregated low copper clips, 13.00-13.50; segregated high copper clips, 13.00-13.50; mixed low copper clips, 12.00-12.50; mixed high copper clips, 10.75-11.25.

(Cents per pound, Chicago)

Aluminum: Old castings and sheets, 11.00-11.50; clean borings and turnings, 9.00-9.50; segregated low copper clips, 15.50-16.00; segregated high copper clips, 15.00-15.50; mixed low copper clips, 15.00-15.50; mixed high copper clips, 14.50-15.00.

(Cents per pound, Cleveland)

Aluminum: Old castings and sheets, 10.00-10.50; clean borings and turnings, 9.00-9.50; segregated low copper clips, 14.00-14.50; segregated high copper clips, 12.50-13.00; mixed low copper clips, 13.00-13.50; mixed high copper clips, 12.00-12.50.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 55.00; light scrap, 50.00; turnings and borings, 35.00.

Copper and Brass: No. 1 heavy copper and wire, 26.00; No. 2 heavy copper and wire, 24.25; light copper, 22.00; refinery brass (60% copper) per dry copper content, 24.25.

INGOTMAKERS' BUYING PRICES

Copper and Brass: No. 1 heavy copper and wire, 26.00; No. 2 heavy copper and wire, 24.25; light copper, 22.00; No. 1 composition borings, 20.00; No. 1 composition solids, 20.50; heavy yellow brass solids, 14.50; yellow brass turnings, 13.50; radiators, 15.50.

PLATING MATERIALS

(F.o.b shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes, $1.45. **Copper:** Flat-rolled, 46.79; oval, 45.00; 5000-10,000 lb; electrodeposited, 38.50, 2000-5000 lb lots; cast, 41.00, 5000-10,000 lb quantities.

Nickel: Depolarized, less than 100 lb, 114.25; 100-499 lb, 112.00; 500-4999 lb, 107.50; 5000-29,999 lb, 105.25; 30,000 lb, 103.00. Carbonized, deduct 3 cents a lb.

Tin: Bar or slab, less than 200 lb, 118.50; 200-499 lb, 117.00; 500-999 lb, 116.50; 1000 lb or more, 116.00.

Zinc: Balls, 18.00; flat tops, 18.00; flats, 20.75; ovals, 20.00, ton lots.

CHEMICALS

Cadmium Oxide: $1.45 per lb in 100-lb drums.

Chromic Acid (flake): 100-2000 lb, 31.00; 2000-10,000 lb, 30.50; 10,000-20,000 lb, 30.00; 20,000 lb or more, 29.50.

Copper Cyanide: 100-200 lb, 65.90; 300-900 lb, 63.00; 1000-19,900 lb, 61.90.

Copper Sulphate: 100-1900 lb, 14.65; 2000-5900 lb, 12.65; 6000-11,900 lb, 12.40; 12,000-22,900 lb, 12.15; 23,000 lb or more, 11.65.

Nickel Chloride: 100 lb, 45.00; 200 lb, 43.00; 300 lb, 42.00; 400-4900 lb, 40.00; 5000-9900 lb, 38.00; 10,000 lb or more, 37.00.

Nickel Sulphate: 5000-22,999 lb, 29.00; 23,000-39,990 lb, 28.50; 40,000 lb or more, 28.00.

Sodium Cyanide (Cyanobrik): 200 lb, 20.80; 400-800 lb, 19.80; 1000-19,800 lb, 18.80; 20,000 lb or more, 17.80.

Sodium Stannate: Less than 100 lb, 78.50; 100-600 lb, 69.20; 700-1900 lb, 66.40; 2000-9900 lb, 64.60; 10,000 lb or more, 63.30.

Stannous Chloride (Anhydrous): 25 lb, 153.80; 100 lb, 148.90; 400 lb, 146.50; 800-19,900 lb, 105.60; 20,000 lb or more, 99.50.

Stannous Sulphate: Less than 50 lb, 139.00; 50 lb, 109.00; 100-1900 lb, 107.00; 2000 lb or more, 105.00.

Zinc Cyanide: 100-200 lb, 59.00; 300-900 lb, 57.00.

(*Concluded from Page* 137)

ket. Expectations are the mills may pay $1 to $2 a ton more than was paid on the last purchases of open hearth grades.

St. Louis—The market is stronger. A major mill raised its offering prices on barge hauls of open hearth scrap several dollars a ton. Most scrap for this area comes from distant points—New Orleans, Memphis, Louisville, Minneapolis.

Birmingham — Open hearth grades of scrap are at a standstill in this area, largely because of the strike at the Atlanta mill, now in its 12th week.

Houston—Mill demand will be limited this month, and prices are not expected to change noticeably.

Seattle — Dealers are marking time, anticipating no improvement in demand until the second quarter. Yard receipts are light. Small lots are moving for export.

San Francisco—Steel scrap prices are firm, but a slightly weaker tone is noted in the cast iron grades. No. 1 cupola cast is quoted at $44.

Scrap Stocks Set Record

Iron and steel scrap stocks held by domestic consumers on Nov. 30, 8,301,000 gross tons, were at an all-time high, reports the U. S. Bureau of Mines. Pig iron stocks, 3,474,000 gross tons, were up 3 per cent from those held at the end of the preceding month.

Blast Furnace Production Of Metal Off 27% in 1958

The nation's blast furnaces produced 57,764,100 net tons of pig iron and ferroalloys during 1958, reports the American Iron & Steel Institute. That compares with the record 79,338,932 tons produced in the preceding year. The year's output (including 465,456 tons of ferromanganese and spiegeleisen) was equal to 63.5 per cent of furnace capacity, rated at 91,000,110 tons.

December output was 6,072,890 net tons, including 47,505 tons of ferromanganese and spiegeleisen. The total was the largest for any month since October, 1957, and was equal to 78.6 per cent of capacity. Production by states for December and the year:

Pig Iron Production—December
(Net tons)

By State:	December	1958 Total
Massachusetts, New York	360,432	3,629,362
Pennsylvania	1,507,028	14,903,018
Maryland, Virginia, W. Virginia	533,344	5,937,590
Kentucky, Tennessee, Texas	160,227	1,581,312
Alabama	351,516	3,414,802
Ohio	1,075,063	9,662,386
Indiana	820,476	7,773,794
Illinois	503,026	4,200,136
Michigan, Minnesota	426,329	3,320,445
Colorado, Utah, California	335,449	3,341,255
Totals	6,072,890*	57,764,100**

*Includes 47,505 tons of ferromanganese and spiegeleisen.
**Includes 465,456 tons of ferromanganese and spiegeleisen.
Data from American Iron & Steel Institute.

Pig Iron . . .

Pig Iron Prices, Page 132

Pig iron shipments are improving, due mainly to a stepup in operations of foundries and nonintegrated steel producers. Automotive foundries are experiencing the biggest increases in melting rates.

Blast furnace operators are increasing production.

Imported pig iron is selling in

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Reply Box 730, STEEL
Penton Bldg. Cleveland 13, Ohio

Help Wanted

WANTED: EXPERIENCED ROLLER FOR SMALL BAR mill. Southern location, excellent working conditions. Give resume experience, present employment, salary desired, and availability. Reply Box 729, STEEL, Penton Bldg., Cleveland 13, Ohio.

GEAR PROBLEMS?

—check with FAIRFIELD!

GEAR PERFORMANCE to match the ever-increasing power and speed of modern machines is a Fairfield specialty. This is possible because Fairfield has long held a position of leadership in utilizing the most advanced methods, equipment, and techniques for producing better gears. By keeping apace with modern engineering trends, Fairfield renders an invaluable service to many of the nation's leading machinery builders.

If you have a gear problem, check with Fairfield. Our engineers are well-qualified to give you expert recommendations. CALL OR WRITE.

SPUR GEARS—Straight, helical, and internal. Sizes from 16 pitch, 1½" dia., to 1½ pitch, 36" dia.

HERRINGBONE—(Fellows Type). Sizes from 1½" to 15"

SPIRAL BEVEL—Sizes from 16 pitch, 1½" dia., to 1½ pitch, 28" dia.

STRAIGHT BEVEL—Sizes from 16 pitch, 1½" dia., to 1½ pitch, 28" dia.

HYPOID—Sizes from 1½" to 28" dia.

ZEROL—Sizes from 16 pitch, 1½" dia., to 1½ pitch, 21" dia.

WORMS AND WORM GEARS—Worms to 7" dia. Worm gears to 36" dia.

SPLINED SHAFTS—Lengths to 72".

DIFFERENTIALS—3,000 to 500,000 inch pounds capacity.

Note: All of the sizes above are approximate.

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the East at $58 for foundry grade, $61 for bessemer, and $56 for basic.

Wire . . .

Wire Prices, Pages 129 & 130

Consumers are beginning to show more interest in their inventory positions. They are doing a little more forward buying, and deliveries are becoming a little more extended than they were. But the big bulge in inventory replenishment, and protective buying against a possible midyear steel strike, is not expected until March or April.

Forward orders are on the conservative side. They're largely for the longer-processed high carbon products. That means deliveries have not been materially extended on many grades. Cold-heading wire, for instance, can still be booked for February shipment. Demand for prestressed concrete wire is slightly more active.

A major European mill has told its customers its recent price reductions may not be effective for long, steel sellers in the Houston area report. In a letter distributed with its new price list, the mill is said to have indicated the reductions resulted from undercutting by French competition. Texas customers were told it was the policy of the French to export to the limit to take advantage of the recent French currency devaluation.

Tubular Goods . . .

Tubular Goods Prices, Page 131

Pipemakers are booking larger volume business, but they are not rushed and can give relatively prompt deliveries in most categories. That's particularly the case with standard pipe, which is moving sluggishly seasonally. An upsurge should develop soon, especially from distributors who need to fill out their stocks to meet the requirements of the oncoming building season.

First quarter orders for seamless steel tubing for steam, power, and oil refining are especially heavy, reports the Steel Div. of Timken Roller Bearing Co., Canton, Ohio. The division is increasing steel production, and will be producing more than 58,000 ingot tons per month shortly, which is more than 100 per cent of capacity, a level not attained since early in 1957.

Advertising Index

Acme-Newport Steel Co. 114
Acme Welding Division of The United Tool & Die Co. 68
Adams, R. P., Co., Inc. 16
Air Reduction Sales Co., A Division of Air Reduction, Inc. 126
Ajax Electric Motor Corporation 143
Ajax Engineering Corporation 9
Alan Wood Steel Co. 136
Allegheny Ludlum Steel Corporation 146
American Optical Co., Safety Products Division 34
Armco Steel Corporation 42
Aronson Machine Co. 112
Atlas Car & Mfg. Co. 10

Babcock & Wilcox Co., The, Tubular Products Division ..... Inside Front Cover
Barium Steel Corporation 76
Bay State Abrasive Products Co. 108, 109
Bearings, Inc. 98
Bethlehem Steel Co. 1
Bliss, E. W., Co., Rolling Mill Division 11
Borg-Warner Corporation, Ingersoll Kalamazoo Division 123
Borg-Warner Industrial Cranes 73
Bridgeport Brass Co. 89
Bullard Co., The 8

Chase Brass & Copper Co. 80
Cincinnati Milling Machine Co., The, Meta-Dynamics Division 7
Cleveland Crane & Engineering Co., The ... 24
Colorado Fuel & Iron Corporation, The ..18, 19, 25
Commercial Shearing & Stamping Co. 2
Continental Steel Corporation 56
Coolidge Corporation 69
Copperweld Steel Co., Ohio Seamless Tube Division 13

Detroit Stamping Co. 111
Diamond Mfg. Co. 6
Dreis & Krump Manufacturing Co. 12
Duraloy Co., The 102

Eastman Kodak Co., X-ray Division 103
Easton Car & Construction Co. 94, 95
Erie Forge & Steel Corporation 93
Eureka Fire Brick Works 123

Fairfield Manufacturing Co. 144

General Motors Corporation, Hyatt Bearings Division 62
General Motors, New Departure Division 65
Goodyear Tire & Rubber Co., Inc., The, Industrial Products Division 4

Hallden Machine Co. 91
Harrington & King Perforating Co., Inc., The .. 112
Haynes Stellite Co., A Division of Union Carbide Corporation 27
Hobart Brothers Co. 3
Houghton, E. F., & Co. 141
Hyatt Bearings Division, General Motors Corporation 62

Ingersoll Kalamazoo Division, Borg-Warner Corporation 123
Inland Steel Co. 122
International Nickel Co., Inc., The 36

Kaiser Engineers, Division of Henry J. Kaiser Co. 22
Kardong Brothers, Inc. 135
Keystone Steel & Wire Co. 105

Lagemann Brothers Co. 139

McGill Manufacturing Co., Inc., Bearing Division 26

May-Fran Engineering, Inc. 110
Mesta Machine Co. ..... Back Cover
Miller Electric Manufacturing Co., Inc. 118
Morgan Construction Co. 55
Morse Twist Drill & Machine Co. 14, 15
Mundt, Charles, & Sons 145

National Acme Co., The 100, 101
National Steel Corporation 116
New Department, Division of General Motors 65
Niagara Machine & Tool Works 17
Nicholson File Co. 30

Ohio Seamless Tube Division of Copperweld Steel Co. 13
Ohio Steel Foundry Co., The 70
Owen Bucket Co., The 135

Peterson Steels, Inc. 113
Phoenix Steel Corporation 76
Pickands Mather & Co. 33
Procunier Safety Chuck Co. 135

Republic Steel Corporation 28, 29
Roebling's, John A., Sons Corporation, A Subsidiary of The Colorado Fuel & Iron Corporation 25

Sandvik Steel, Inc. 20
Sealmaster Bearings, A Division of Stephens-Adamson Mfg. Co. 23
Stamco, Inc. 121
Standard Screw Co. 21
Stephens-Adamson Mfg. Co., Sealmaster Bearings Division 23

Texas Co., The 79
Thomas Flexible Coupling Co. 120
Timken Roller Bearing Co., The, Steel & Tube Division 66
Torrington Co., The 41

Udylite Corporation, The 75
Union Carbide Corporation, Haynes Stellite Division 27
United Engineering & Foundry Co. 35
United Tool & Die Co., The, Acme Welding Division 68

Valley Mould & Iron Corporation 44

Ward-Steel Co. 137
Washington Steel Corporation 119
Wean Engineering Co., Inc., The 58, 59
Weirton Steel Co. 116
Wheland Co., The 137
Whitehead Metals, Inc. 107
Wickwire Spencer Steel Division of The Colorado Fuel & Iron Corporation 18, 19
Wilson, Lee, Engineering Co., Inc. ..... Inside Back Cover

Youngstown Sheet & Tube Co., The 31

Table of Contents, Page 5

Classified Advertising, Page 143

MUNDT

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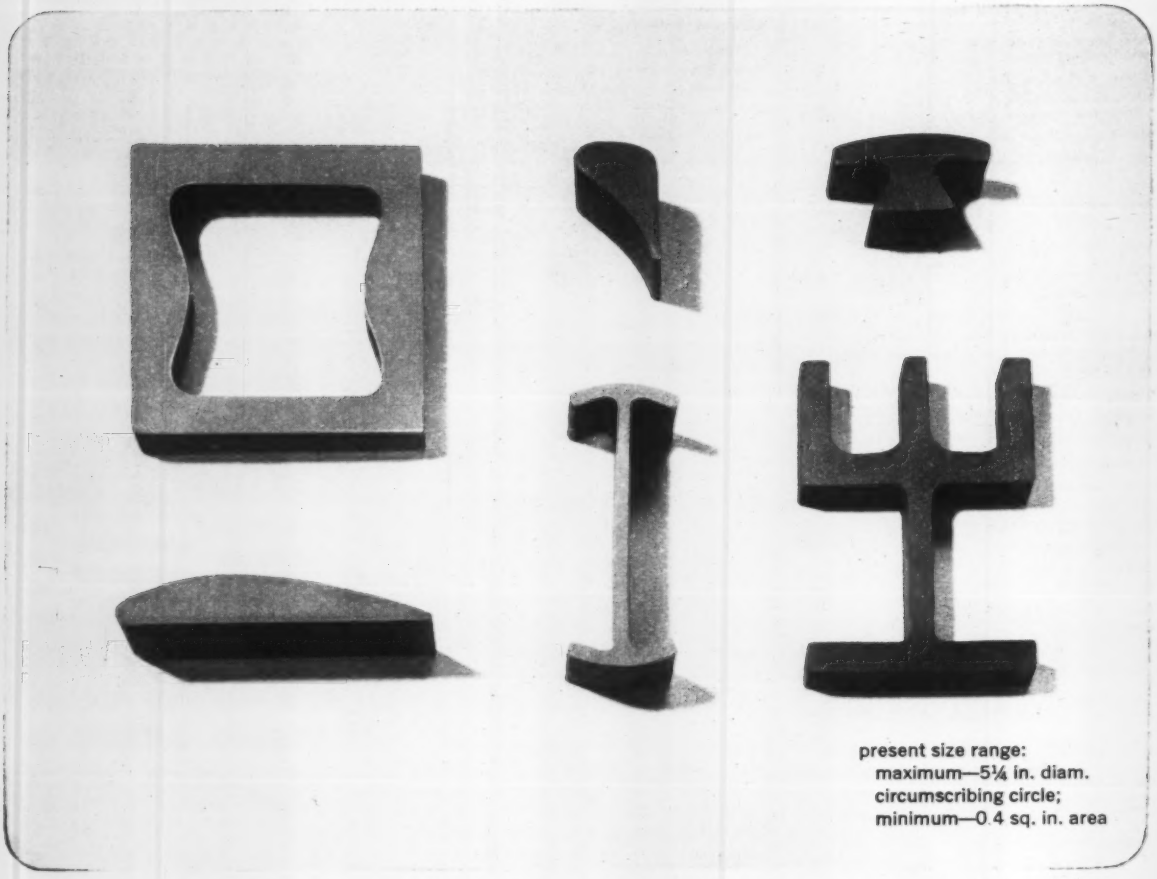

present size range:
maximum—5¼ in. diam. circumscribing circle;
minimum—0.4 sq. in. area

- 321 Stainless
- 410 Stainless
- 405 Stainless
- SAE 1020
- 304 Stainless
- SAE 4340

Here's how highly intricate steel extrusions from Allegheny Ludlum help you cut costs

Allegheny Ludlum Extrusions can help you cut costs, save money. If you are now rolling, casting or machining steel parts like these, consider the cost-cutting features inherent in extruding metal, already proved by non-ferrous extrusions during the last 10 years.

A-L high-quality Steel Extrusions can save you money on four very important counts. (1) Orders are taken in quantities as small as 40 pounds. No large tonnage rolling requirements. (2) Charge for die design is low—under $200. No expensive rolls to cut. (3) Machining costs are slashed to a minimum; there's no waste of material. (4) Extruding saves time from the order to availability of finished parts.

There is no limit to what steels can be extruded. Allegheny Ludlum works everything from all stainless grades to carbon and electrical steels, high temperature alloys, nickel alloys and even metals such as zirconium.

Prove to yourself that extruding steel can save you money. Write for Allegheny Ludlum's 12-page technical bulletin, full of process explanations, material properties, design tips, etc. Or contact your nearest A-L office for technical assistance.

Allegheny Ludlum Steel Corporation, Oliver Bldg., Pittsburgh 22, Pennsylvania. Address Dept. S-14.

WSW 7120

ALLEGHENY LUDLUM

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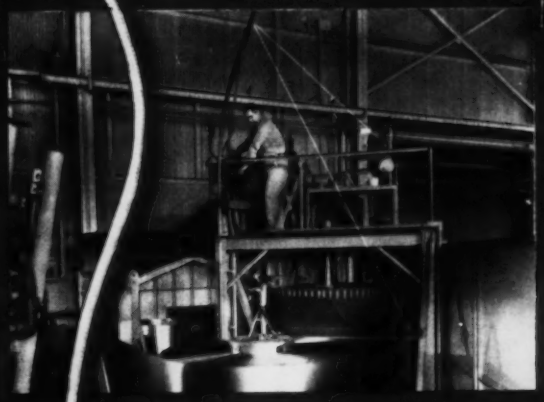

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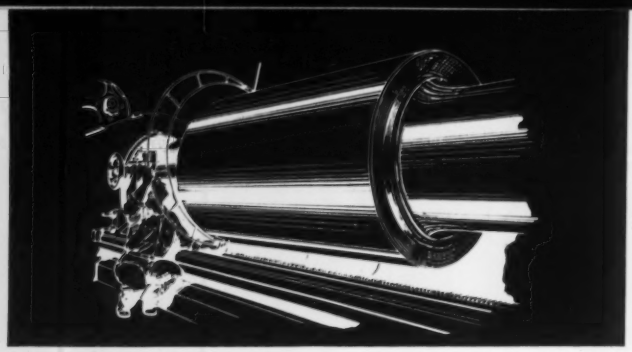

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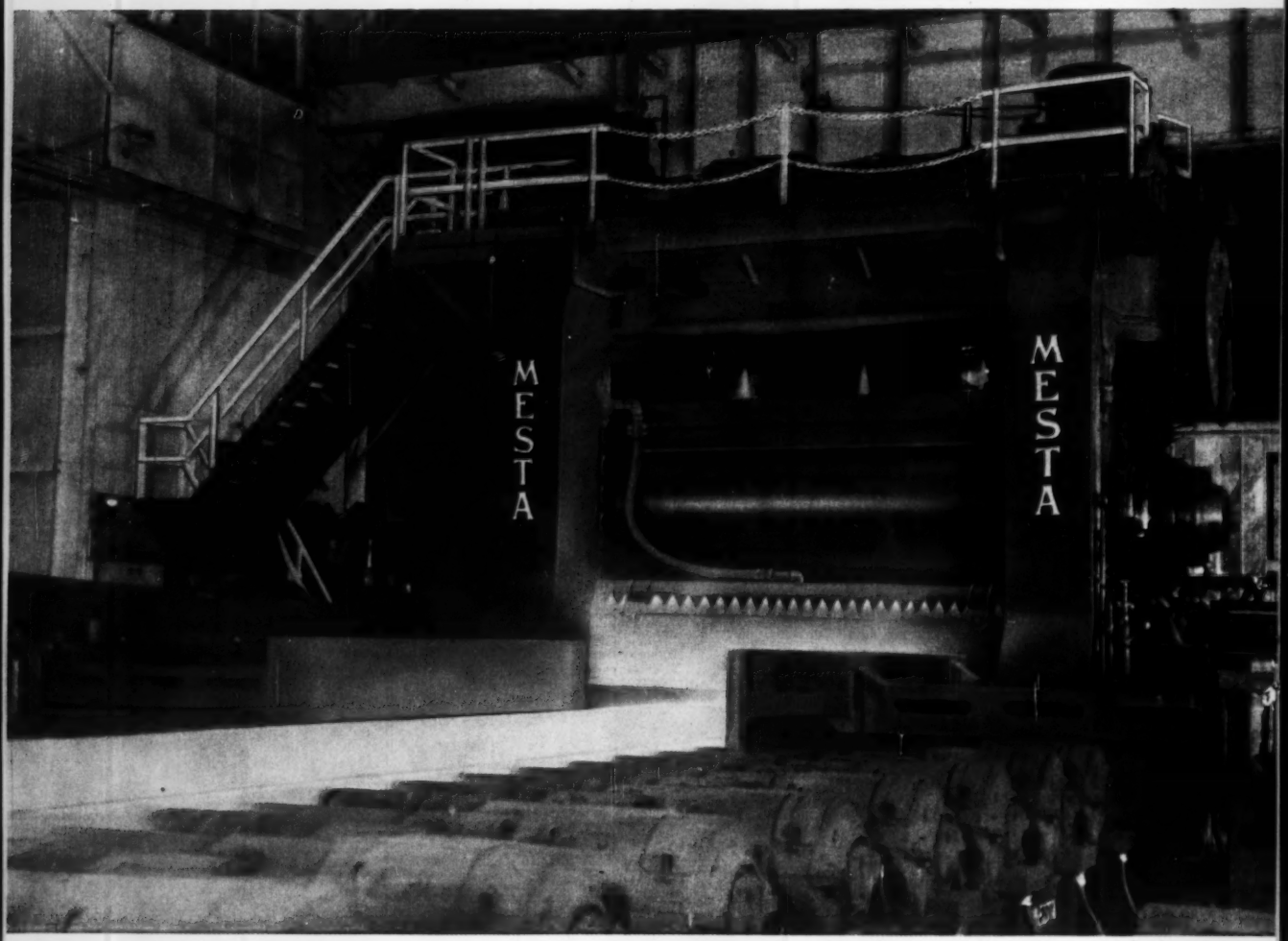

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